SEE FOLLOWING NOTE

VOIR NOTE CI-APRÈS

PARTS OF THE ORIGINAL DOCUMENT ARE OF POOR REPRODUCTIVE QUALITY.

MICROMEDIA LIMITED HAS ATTEMPTED TO PRODUCE THE BEST POSSIBLE COPY.

CERTAINES PARTIES DU DOCUMENT ORIGINAL SONT DE PIÈTRE QUALITÈ DE REPRODUCTION.

MICROMEDIA LTEE A ESSAYEE DE PROCURER LE MEILLEUR EXEMPLAIRE POSSIBLE.

Penetrating the United States Construction Market

January 1990

A Study of the U.S. Market for the Department of External Affairs and International Trade and the Canadian Construction Association by Ernst & Young Management Consultants

Final Report

90-06873/

PENETRATING THE UNITED STATES CONSTRUCTION MARKET

TABLE OF CONTENTS

EXECUTIVE SUMMARY

SECTION ONE: INTRODUCTION *1*

1.1 RECENT CANADIAN ACTIVITIES 1
1.2 THE CANADA-U.S. TRADE AGREEMENT 2
1.3 THE REPORT 3

SECTION TWO: THE NATIONAL CONSTRUCTION SCENE *6*

2.1 ECONOMIC CHARACTERISTICS 6
2.2 DEMOGRAPHIC CHARACTERISTICS 7
2.3 CONSTRUCTION CHARACTERISTICS AND TRENDS 8
2.4 CONSTRUCTION OUTLOOK 15

SECTION THREE: ACTIVITY AND OUTLOOK BY SEGMENT *17*

3.1 RESIDENTIAL CONSTRUCTION 17
3.1.1 Single-Unit Housing 17
3.1.2 Multi-Unit Housing 18
3.1.3 Mobile Homes 18
3.1.4 Residential Upkeep 18
3.2 PRIVATE NONRESIDENTIAL CONSTRUCTION 19
3.2.1 Maintenance and Renovation 20
3.2.2 Industrial Construction 20
3.2.3 Office Construction 23
3.2.4 Other Commercial Construction 24
3.2.5 Private Electric Utilities 25
3.3 CONSTRUCTION OF PUBLIC WORKS 26
3.3.1 Roads, Highways and Bridges 29
3.3.2 Mass Transit 31
3.3.3 Airports and Airways 32
3.3.4 Health Care 33
3.3.5 Environmental Construction 34
3.3.6 Waste Disposal Systems 35
3.3.7 Water Supply Systems 36
3.3.8 Educational and Correctional Buildings 37
3.3.9 Military and NASA Construction 38

SECTION FOUR: ACTIVITY AND OUTLOOK BY REGION 40

4.1 INTRODUCTION 40
4.2 WEST REGION 42
4.3 SOUTH REGION 45
4.4 MIDWEST REGION 47
4.5 NORTHEAST REGION 48

SECTION FIVE: LABOUR AND UNIONIZATION ISSUES 51

5.1 BACKGROUND 51
5.2 UNIONIZATION TRENDS 51
5.3 COST OF CONSTRUCTION LABOUR 54
5.4. COST OF OTHER INPUTS 55

SECTION SIX: TAX AND SURETY CONSIDERATIONS 57

6.1 TAXATION ISSUES 57
6.2 INSURANCE AND SURETY MATTERS 58

SECTION SEVEN: PENETRATING THE U.S. MARKET 59

7.1 BACKGROUND 59
7.2 BARRIERS TO ENTERING THE U.S. CONSTRUCTION MARKET 59
7.3 STRATEGIES OF FOREIGN CONTRACTORS IN THE U.S. MARKET 65
7.4 RECOMMENDED ENTRY STRATEGIES FOR CANADIAN FIRMS 67

LIST OF TABLES

TABLE 1-1: EXAMPLES OF RECENT U.S. PROJECTS OF CANADIAN CONTRACTORS

TABLE 1-2: REGIONS AND SEGMENTS STUDIED IN THE REPORT

TABLE 2-1: CANADIAN AND AMERICAN ECONOMIC DATA

TABLE 2-2: THE REGIONS BY POPULATION, GROWTH AND INCOME

TABLE 2-3: PERCENTAGE BREAKDOWN OF NEW CONSTRUCTION IN THE U.S.

TABLE 2-4: VALUE OF NEW CONSTRUCTION PUT IN PLACE (1982-89)

TABLE 2-5: FOREIGN CONTRACTORS WITH THE MOST U.S. WORK IN 1985

TABLE 2-6: CONSTRUCTION R&D SPENDING IN SELECTED COUNTRIES

TABLE 3-1: INDUSTRIAL VACANCY RATES IN MAJOR METROPOLITAN AREAS

TABLE 3-2: OFFICE VACANCY RATES AND PROJECTIONS, BY REGION

TABLE 3-3: OFFICE VACANCY RATES IN MAJOR DOWNTOWN AREAS

TABLE 3-4: REPORT CARD ON THE NATION'S PUBLIC WORKS

TABLE 3-5: 1987 ESTIMATE OF TOTAL INFRASTRUCTURE NEEDS OF THE U.S.

TABLE 4-1: THE STATES BY POPULATION, GROWTH AND INCOME

TABLE 4-2: REGIONAL CONSTRUCTION EXPENDITURES, BY SEGMENT

TABLE 4-3: FIVE-YEAR CONSTRUCTION TRENDS IN THE WEST

TABLE 4-4: FIVE-YEAR CONSTRUCTION TRENDS IN THE SOUTH

TABLE 4-5: FIVE-YEAR CONSTRUCTION TRENDS IN THE MIDWEST

TABLE 4-6: FIVE-YEAR CONSTRUCTION TRENDS IN THE NORTHEAST

TABLE 5-1: ESTIMATED UNIONIZATION AND CONSTRUCTION WAGES, BY STATE

TABLE 5-2: EARNINGS OF CANADIAN VERSUS U.S. CONSTRUCTION WORKERS

TABLE 5-3: AVERAGE WEEKLY EARNINGS BY TYPE OF CONSTRUCTION

TABLE 7-1: STATE PROCUREMENT PRACTICES AFFECTING A-E FIRMS

TABLE A-1: PROMINENT CONSTRUCTION COMPANIES IN THE U.S.

TABLE E-1: CANADIAN CONSULATES AND TRADE OFFICES IN THE U.S.

TABLE E-2: INDUSTRY, SCIENCE AND TECHNOLOGY CANADA OFFICES

TABLE E-3: PROVINCIAL INDUSTRY DEPARTMENT OFFICES

LIST OF APPENDICES

APPENDIX A: PROMINENT COMPETITORS

APPENDIX B: CONSTRUCTION TRADE SHOWS

APPENDIX C: MAGAZINES, STUDIES AND OTHER SOURCES

APPENDIX D: CONSTRUCTION INDUSTRY ORGANIZATIONS

APPENDIX E: CANADIAN GOVERNMENT ASSISTANCE

APPENDIX F: FOREIGN DIRECT INVESTMENT IN THE INDUSTRY

APPENDIX G: GOVERNMENT PROCUREMENT

APPENDIX H: WEEKLY WAGES BY TRADE AND REGION

APPENDIX J: INDUSTRIAL CONSTRUCTION COSTS BY REGION

APPENDIX K: TAX RATES BY STATE

INTERVIEWEES AND REFERENCES

Penetrating the United States Construction Market

Executive Summary

EXECUTIVE SUMMARY

Introduction

The American construction market is the largest in the world and offers a wide range of exciting opportunities to Canadian companies. Regionally, the American economy represents nine "Canada's"; five of the nine geographic divisions described in the text have populations greater than Canada's, while the other four each exceed one-half of Canada's population. There are 41 American metropolitan areas with population exceeding one million, compared to three in Canada. Construction expenditures in California alone are approximately equal to those in Canada.

Some of the world's largest construction firms have entered the American market during the past decade, as activity in developing nations and the Middle East nations slowed. Our information suggests that the American market allows for a higher profitability than the Canadian market, particularly when compared with the tight Toronto and Montreal markets. More promising still is the fact that the American market is relatively open to foreign competition and the trend is toward increased foreign penetration of the market. However, Canadian firms should be aware that, while individual projects and the market in general may allow higher profitability, information obtained from the U.S. Department of Commerce suggests that foreign construction companies to date are suffering losses on their U.S. activities[1] and that it may take a few more years for the investments of these firms to start paying off.

The recently-enacted Canada-U.S. Trade Agreement is expected to enhance Canadian exports of construction services and materials by reducing border-crossing delays through eased access to temporary work permits, by focusing future government negotiating efforts on procurement matters, and by securing capital investments against adhoc protectionism. However, the impact upon construction exports into the United States, while positive, is not expected to be dramatic, and it will be less than the impact upon domestic construction activity. As expressed in a U.S. analysis of the pact, "the impact on the U.S. construction industry will be minimal because there are very few existing barriers and the Canadian contractors able to compete in the U.S. are probably already doing business here". This view, however, does not encompass the fact that relatively few Canadian contractors seriously attempted to enter the American market prior to the trade agreement.

---

[1]The Department of Commerce's *1987 Survey of Current Business* shows the Net Income position of Foreign Direct Investment Construction Firms as being a loss of $US 27 million in 1981, a loss of $US 44 million in 1982, a profit of $US 13 million in 1983, a loss of $US 65 million in 1984, and a loss of $US 133 million in 1985. This may be influenced by what a Commerce Department Officer described as "a Japanese philosophy that the cost of entering a market is to lose money for ten years".

Given the large size of the American market, the increased global competition in the construction industry, the coming into force of the trade agreement, and the minimal efforts undertaken to date, the federal trade department together with Ernst & Young Management Consultants (formerly Woods Gordon) and the Canadian Construction Association felt that a review of the American market, widely distributed to Canadian construction organizations, would be of long-term benefit to the Canadian industry.

Structure and Characteristics of the U.S. Market

The economy in which the American construction market operates is not unlike our own. Both economies have enjoyed strong growth since 1982. Canadian interest rates generally exceed but follow the swings in American rates, because of the large volumes of dollars which readily cross the border, and because of the potential impact of changes in the interest rate differential upon the value of the Canadian currency. The economies have similar per capita incomes, with about a ten percent margin in favour of the United States. Each nation is experiencing similar demographic and economic changes, such as the aging population, a movement toward service employment and away from industrial activity, a requirement for improved training, and an adjustment to rapid technological evolution and liberalized trade. Economic growth is not uniform across either nation; for example, Canadian growth has been highest in Ontario and lowest in the Atlantic provinces, while American economic growth has been highest in New England (until recently) and lowest in Texas.

Reflecting these similarities in the underlying economic forces, the structure of the Canadian and American construction industries also exhibit similarities. Spending on new construction in both countries is divided roughly one-half residential, one-third private nonresidential, and one-fifth public nonresidential. On a per capita basis, the number of firms in the two countries are about equal; there are approximately ten times as many construction firms in the U.S. as in Canada, and ten times as many "large" (over $US 10 million in annual sales) firms . Firms of this size account for about 35 percent of industry revenues in each country. However, the "large" American firms are considerably bigger than "large" Canadian companies, and have historically been much more active internationally. Construction wages are also comparable between the two countries, averaging $US 496 weekly in the United States versus $US 485 in Canada in 1989.

During recent years, American construction firms have been losing market share internationally, as well as in their own market. The value of international contracts won by those American

contractors which are ranked amongst the world's largest 250 firms decreased from $US 44 billion to $US 23 billion during the 1981 to 1986 period. Furthermore, in the American market, foreign firms have increased their contracts from $US 3.6 to $US 8.9 billion during the five-year period preceding 1987. The bulk (70 percent) of the foreign penetration in the American market has resulted from acquisition of existing American firms, with the remainder stemming from the establishing of new branch offices. German, Japanese, French, and British firms are the most prominent international players in the United States, although Canadian firms have also enjoyed some success. The trend in both the American and offshore markets, then, appears to be one of increased globalization.

Construction unionization in the U.S. has declined significantly during recent decades from 50 percent unionization in 1966 to a current level of around 25 percent. This is lower than Canadian levels, although, as discussed in Section Five, unionization still plays a considerable role in cities such as New York, Boston, Philadelphia and San Francisco.

The issue of insurance and liability is more prevalent in the United States than in Canada - Section Six provides further information on this subject, as well as on matters of taxation. Tax reforms introduced in 1986 have served to decrease construction activity, particularly that which was based to a high degree on tax-related considerations. The negative aspects of these changes are expected to be absorbed by the early 1990's, while the stimulative aspects will increase steadily.

Growth and Outlook by Segment

There are a number of factors affecting the pace of U.S. construction activity. Some are of a local nature, such as California or Florida implementing restrictions or development guidelines upon certain segments or in certain cities. Others are of a more general nature and include:

- federal budgetary concerns slowing the pace of needed infrastructure spending;
- improved east-west relations, and the potential for reduced military spending and increased infrastructure spending;
- trade deficits contributing to excess plant capacity and therefore limiting industrial construction expenditures;
- tax changes slowing the pace of office and condominium construction;
- the aging of facilities and the requirement for renovation, repair and remodeling expenditures;
- technological changes which alter the requirement for particular types of construction;
- environmental developments potentially stimulating significant construction expenditures in areas such as emission reduction, water diversion, and waste treatment;
- continued suburbanization and the resulting demands upon mass transit systems;
- the aging and over-use of highways, bridges, airports, water and sewage facilities and the requirement for increased expenditures.

Reflecting these and other market forces, there are a number of segments which appear to have the greatest growth potential in the early 1990's and which may be of interest to qualified Canadian firms. These areas, in approximate order of attractiveness, include:

- maintenance and renovation;
- mass transit;
- highways and bridges;
- health care facilities;
- environmental construction projects;
- manufacturing facilities;
- water supply systems;
- schools;
- certain commercial facilities.

These areas are reviewed in Section Three of this report. Should the CCA and External Affairs wish to organize a trade mission of Canadian contractors, we recommend that one or more of these segments be given initial consideration.

In each of these areas, the size of the American market and the projected growth volumes are huge by Canadian standards. For example, residential renovations, including do-it-yourself activity, are expected to amount to $US 105 billion in 1989 and to surpass new residential spending by the mid-1990's. Expenditures on manufacturing facilities total some $US 15 billion annually and project fairly strong levels as the economy modernizes, as foreign investment increases, and as the trade deficit declines. At more specific levels, the opportunities appear equally impressive. Along the west coast, for example, Seattle, San Francisco, Los Angeles, Honolulu, among others, all have mass transit expenditure projections in the billions of dollars over the next decade. Other infrastructure areas, such as airports and sewage systems, have annual requirements in the $US 5 billion-plus range. Regionally, the Western states as well as the New England states have been experiencing rapid growth and, allowing for a slowdown during the early-1990's, project strong future activity. Regional activities are discussed in Section Four of the Report.

While representing potentially exciting opportunities, some caution should be exercised when examining these statistics and trends as a means of identifying "winning regions and segments". A particular region or segment having had five years of good growth does not necessarily indicate that five more years of good growth are in store. Indeed, the odds are that it may indicate the opposite, as high volume of construction activity may lead to a situation of excess capacity of office space, industrial facilities, housing and other buildings. While we have encountered many

documents stating that construction in a certain region and segment is expected to grow, say, for two years, we have attempted to keep such information at a minimum. Typically, information that a certain market is booming indicates that it may already be too late for Canadian firms to capitalize on the boom. Thus, while identifying growth regions and segments will assist the individual firm's market penetration effort to some degree, we feel that it is more important that Canadian firms identify stable regions which make sense for them, and enter these regions while keeping in mind the information and advice provided in this study.

Strategies for Entry

Beyond the basic analysis of market trends, it is equally important that potential entrants identify segments and regions which are consistent with their own financial, organizational, and technological capabilities, and that local contacts be established as a means of entering the market.

The majority of foreign firms are entering the American market through the acquisition route. While no existing information discerns between profitability by type of investment, government and industry officials generally feel that entering via an acquisition is more profitable in the long-term than entry through opening a new office. This route gives the foreign firm an established presence in the market, and it may be less expensive than opening and marketing an entirely new operation.

While acquisition is a preferred method, some Japanese firms have entered the U.S. market through establishing greenfield operations, although this route appears to be falling into disfavour. For reasons of geography and culture, Canadian firms would presumably have an easier time than Japanese firms in opening a local office or in entering a joint venture as a means of entering the market - some Canadian companies may find this to be preferable to acquisition, particularly if faced with an onerous purchase price.

Recommendations

Section Seven of the report discusses various guidelines and recommendations, adherence to which should assist Canadian contractors in penetrating the U.S. market. Some of these include:

- Firms should enter into U.S. segments in which they have Canadian expertise. While this would appear to be an obvious point, some Canadian firms in previous U.S. experiences have bid for and won projects which were "out of their league". Of the projects that we discussed with Canadian firms, these are the ones which have subsequently caused difficulties.

- By constructing many of the Japanese-financed capital projects, several Japanese firms have benefitted from the huge amounts of Japanese investment flowing into the United States. In penetrating the market, it would clearly be helpful for Canadian contractors if Canadian developers, engineers and manufacturers were similarly aligned with Canadian construction firms. To date, this does not appear to have been the case. Perhaps it would be possible for the CCA, along with the federal industry and trade departments, to foster these ties with Canadian engineers and developers more aggressively. Certainly, there is room for individual Canadian firms to more closely align themselves with individual Architectural-Engineering firms, developers, transit authorities, manufacturers and materials suppliers. Such a path is recommended.

- Canadian firms should generally adopt a local partner as a means of conducting work in the United States. Although this may also seem to be obvious, firms have in previous instances entered into geographic markets where they lacked the "local know-how" and lost money on the project because of friction with the unions or with the state government inspectors. The local partner should have knowledge of the "little" things such as local lawyers and bank managers, as well as having smooth relations with local union leaders and government officials. As firms become better established in the U.S. region and develop their contacts with labour, industry and government, the need for local partnerships becomes less critical.

- The formality of client transactions should be handled through a locally-established office. Indeed, the economics, project location, and future plans may be such that the Canadian firm may wish to post staff in this office on a permanent basis. The hiring, firing, and subcontracting in many instances is best left to the local partner (with joint consultation), particularly if local unions and governments are involved. While unionization has been declining in the American industry for several years (see Section Five), we have nonetheless encountered instances where Canadian firms were plagued by local American unions and inspectors to the point of virtually being bankrupted.

  There is formal or informal local favourtism in many instances, and Canadian firms should be prepared for this. However, the clients tend not to distinguish Canadians from out-of-state firms, and in this sense there is no foreign discrimination which is not also applied to a firm from another state. In preparing plans, or in staffing the project management and project engineer for their American activities, Canadian firms do not appear to have had difficulties using some resources from their Canadian offices.

- At some point, potential entrants will have to decide to "get out there and do it". Bid documents are generally not difficult to obtain - for example, a Canadian waterfront-design engineering firm which currently does four-fifths of its annual business in the United States has reached its profitable stage through linking with local firms and presenting its relevant expertise in a proposal. The firm's partners suggest that appropriate expertise, proper local partners, efficient bidding, and tight control of overheads should land contracts without a huge front-end expense. Canadian construction firms from British Columbia to the Atlantic could also follow this strategy.

- Firms should obtain some knowledge of the local environment prior to bidding. Through visiting the region of interest and through attending the types of meetings that can be arranged by the local Canadian Consulate[1], the firm will gain valuable knowledge of the region.

---

[1]Officers with the thirteen Canadian Consulates (and fourteen satellite offices) in the United States have often established good contacts and have sufficient goodwill to open doors for Canadian firms. These officers should be used by companies when entering a particular region.

- Companies should be prepared, on most government funded projects, to encounter requirements for *business set-asides*, requiring that certain portions of work be reserved for "disadvantaged groups". This may require working with under-capitalized or under-qualified firms, and handling considerable paperwork in the process . Furthermore, appropriate minority firms may be in high demand, particularly during strong economic times.

- If companies do enter the market through acquiring a local firm, it is recommended that the local character and entrepreneurs be retained in the acquired company. American construction unions, inspectors, suppliers and developers tend to appreciate, recognize and reward established firms and people more than, as described by one Maryland contractor, "people who blew into town yesterday".

Purpose of this Report

This study for the Department of External Affairs and International Trade and the Canadian Construction Association is intended to provide executives, managers, engineers and other workers in the Canadian construction industry[1] with the background information required to penetrate the American market. The document is intended to meet a variety of needs for firms across Canada that are looking to the United States for new opportunities - for example, it could serve as a reference document prior to attending a trade show or a meeting with a potential joint venture partner. It also provides project managers with material pertaining to regional unionization levels, wage rates, trade labour, taxation and other items of interest to industry.

In participating in the design of this study, the CCA stressed two things. First, that the Canadian construction industry has capabilities in virtually all segments. Second, that the niche orientation of a large number of its members could mean that, for many Canadian firms, the best market opportunity may still be found in their area of specialization, even if it has only modest growth prospects in the United States. For these reasons, our report covers each of the major market segments, rather than merely focussing on the few with the greatest projected market growth.

The CCA also stressed that firms which supply materials (such as structural steel, bricks, certain concretes) and specialized services (such as steel erection, concrete fireproofing, piling) should benefit from the information contained in the study. Thus, while of interest to contractors, this report should also be of value to Canadian speciality firms and subcontractors.

As discussed earlier, there are particular segments and regions which offer strong long-term potential for Canadian industry. Sections Three (segments) and Four (regions) address these in

[1] It may also be of interest to Canadian developers, designers, and some manufacturers.

some detail. Government and association officials, in arranging a trade mission or in formulating a particular policy, may wish to refer to these Sections.

Methodology

The content of the study has been derived both from an extensive review of existing information gathered from American and Canadian sources, and from a series of interviews and meetings held with construction experts in Canadian and American academia, governments, associations, and industries. Meetings with the Canadian Construction Association and the Department of External Affairs early in the process were useful in providing us with an indication of the type of information desired by the co-clients. The subsequent gathering, analysis, and editing of the information has been completed with the interests of the two clients in mind. There was agreement by the co-clients that the experiences and lessons already absorbed by Canadian firms in the U.S. market would be of use in this report, and we have therefore contacted selected firms with experience in the American market.

Penetrating the United States Construction Market

Main Text

SECTION ONE: INTRODUCTION

The U.S. construction market is large - slightly over $US 400 billion was spent on construction in 1988 - and opportunities exist for increased penetration by Canadian construction firms into many regions of the market. Some eighty million Americans live in states bordering Canada, and the United States remains one of the most active construction markets in the world.

The construction market in general, and in North America in particular, is becoming more international. Foreign contractors are entering the American market in increasing numbers. As described by an executive with a leading international firm, in explaining the reasons behind his firm's penetration of the market, "Latin America is broke, there's little action in the Mideast, Africa has an occasional interesting project, and we're cautious on the East bloc - this leaves the EEC, the U.S. and Southeast Asia".

Contractors from the United States and other countries are also increasingly penetrating the Canadian construction market. Fully 56 of the 250 largest international contractors are working in Canada and these firms captured $US 6.5 billion worth of Canadian business in 1988, up from $US 3.8 billion the previous year. Greater profits, geographic diversity, and broadened knowledge of business trends, are the usual benefits derived by exporting construction goods and services - these are the factors driving the increased international competition.

1.1 RECENT CANADIAN ACTIVITIES

There are a number of considerations that to date have restricted the international success of Canadian construction contractors. For example, inadequate financing is felt to have prevented many Canadian firms from bidding in export markets. Provincial procurement practices have led to the development of construction firms with local expertise, and inhibited the growth of large national companies of sufficient size to compete effectively in the U.S market[1]. The significant foreign-ownership levels in the Canadian economy has created a situation where parent companies often engage familiar American construction contractors when establishing or expanding their Canadian operations[2]. This has arguably deprived Canadian contractors of market share. Finally, Canadian construction, development, and engineering firms have not combined efforts to the same extent as firms in other countries, and this has limited the success of Canadian construction firms

---

[1]Provincial procurement practices may not be an overly significant barrier, as, on average, Canadian construction firms appear to be approximately the same size as American firms. However, the largest Canadian firms are small relative to their American counterparts.

[2]A similar pattern is felt to be occurring in the United States, where recent Japanese capital investments have used Japanese construction firms in most instances.

Table 1-1: Examples of Recent U.S Projects of Canadian Contractors

Company	*Project*
Atlas-Gest	Submerged tunnel in Mobile, Alabama
	Underground pumping station in Chicago, Illinois
Banister Continental	Crude oil line in Louisiana
	Sewer tunnel in Wisconsin
Bechtel Canada	Coal handling facility in the U.S.
Black and McDonald	Defence and Aerospace projects in the Florida region
Both Belle Robb	Office and hotel complexes throughout the U.S.
Canron	Steel Erection for Office building in New York City
	Bridge in Troy, New York
Commonwealth Construcion	Gold mine in Butte, Montana
Concordia	Learning stores throughout the U.S
	Apartments in Oklahoma City, Oklahoma
Fitzpatrick Construction	Subway station in Buffalo, New York
	Rapid transit extension in New York State
Frankel Steel	Steel Supply and Erection for Office Buildings in New York
Milne & Nicholls	various U.S. projects
Mollenhauer Construction	Commercial developments in Florida
PCL Construction	21 U.S projects underway in 1988
Petrifond Foundation	Office building in Baltimore, Maryland
	Power dams in Washington and Alabama
W.A. Stephenson	Mass transit projects in Seattle and other areas
Schokbeton	Prefab concrete for casino in Atlantic City and hotel in D.C.
Taylor Woodrow	Airport in Florida, among other projects
Western Caissons	Subway piling in Washington, D.C.
George Wimpey Canada	Rapid transit in Miami, Florida
	Roads and sewers work in Florida

Source: Canadian Construction Association and other sources.

in bidding on certain projects. The latter point is particularly noteworthy, as alignment with developers and designers is often a successful strategy for penetrating a foreign construction market.

Despite these traditional limitations, as indicated in Table 1-1, there are a number of Canadian firms which have had recent success in the U.S. market. In conducting this report, we have drawn from the experiences of some of these firms. In this regard, the Fitzpatrick, Stephenson, Milne and Nicholls, Black and McDonald, MacLaren, and Mollenhauer Construction firms have been particularly helpful. It is hoped that other contractors will benefit from the problems and successes encountered by these firms, and from the strategies which these firms have used in entering the market.

1.2 THE CANADA-U.S. TRADE AGREEMENT

The Canada-U.S. Trade Agreement eliminates certain labour certification and prior approval requirements and thus provides for easier border crossing by business persons trading in goods and services. The agreement made only limited progress in the procurement area. Access to state and local government procurement was not enhanced. Industrial restructuring and other spin-offs will, according to the Canadian Construction Association, increase Canadian nonresidential construction levels by two percent more than would otherwise be the case, by 1995. Activity in the United States may increase marginally in the border states. Western New York State, for example, in the Buffalo region, is experiencing increased economic activity as a result of the FTA.

The FTA is expected to enhance Canadian exports of construction services by reducing border-crossing delays through eased access to temporary work permits, by focusing future government negotiating efforts on procurement matters, and through securing capital investments against adhoc protectionism. However, the impact on construction exports into the United States, while positive, is not expected to be dramatic, and it will be less than the impact upon domestic construction activity. As expressed in a U.S. analysis of the pact, "the impact on the U.S. construction industry will be minimal because there are very few existing barriers and the Canadian contractors able to compete in the U.S. are probably already doing business here". This view, however, does not encompass the fact that relatively few Canadian contractors seriously attempted to enter the U.S. market prior to the trade agreement.

Given the large size of the American market, the increased global competition in the construction industry, the trade agreement, and the minimal efforts to date, the federal Department of External

Affairs and International Trade, together with Ernst & Young Management Consultants and the Canadian Construction Association, felt that a review of the U.S. market, widely distributed to Canadian firms, would be of long-term benefit to the Canadian industry.

1.3 THE REPORT

Clients and Objectives

This report presents the findings and opinions of the management consulting firm of Woods Gordon (recently renamed Ernst & Young Management Consultants) and may not necessarily reflect the views or policies of the co-clients.

The report has been conducted for the federal Department of External Affairs and International Trade and the Canadian Construction Association. The former promotes Canadian trade interests abroad - officials from the department, particularly Marvin Bieman, Doreen Conrad, and William Clarke, provided guidance and input throughout this study. Commercial Officers and Consellers from Canadian Consulates abroad were also helpful in providing suggestions, contacts, and information.

The latter, the Canadian Construction Association, represents some 20,000 construction firms in Canada. Officials from the CCA were active in providing input regarding the types of information that potential U.S. market entrants would require. Robert Nuth, Michael Makin, William Nevins, and John Morton from the Export Committee were particularly helpful, providing advice throughout the study. The CCA also formed an advisory board to review the report and provide useful suggestions during the course of the work.

In examining American market prospects, it is clear that without careful planning and clear identification of specific areas of opportunity, and without a good understanding of potential problems, Canadian construction firms will not successfully penetrate the U.S. market. While several previous Canadian entrants have enjoyed success in the huge American market, there are also examples of firms who have encountered problems with unions, local favourtism, and a lack of local market awareness. The purpose of this report then is to provide Canadian construction firms with the market background required to succeed in the U.S. market. The report describes the opportunities, constraints and characteristics of the market for those Canadian firms who may be interested in particular regions or particular segments.

Table 1-2: Regions and Segments Studied in this Report

Segment	*Includes*
1) Residential	single, semi, duplex, apartment and row housing
2) Industrial	factories, mines, mills, railway stations
3) Commercial	warehouse, grain elevators, hotels, restaurants, offices, stores
4) Institutional	schools, churches, hospitals, clinics
5) Marine	docks, breakwaters, canals, dredging, piling, dykes
6) Roads	highways, streets, parking lots, sidewalks
7) Airport Runways	runways, landing strips
8) Waterworks, Sewage	ditches, mains, hydrants, sewage systems, treatment plants
9) Dams and Irrigation	dams, reservoirs, irrigation, land reclamation
10) Electric Power	generating plants, water control structures, transmission lines
11) Railways, Telephone	tracks, telephone lines, cables, microwave projects
12) Gas and Oil	gas mains, pumping stations, refineries, pipelines

Region	*Includes*
Northeast:	
New England	Connecticutt, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont
Mid-Atlantic	New Jersey, New York, Pennsylvania
Midwest:	
E-N Central	Illinois, Indiana, Michigan, Ohio, Wisconsin
W-N Central	Iowa, Kansas, Minnesota, Missouri, Nebraska, Dakota's
South:	
S-Atlantic	Delaware, D.C, Maryland, Carolina's, Virginia's, Florida, Georgia
E-S Central	Alabama, Kentucky, Mississippi, Tennessee
W-S Central	Arkansas, Oklahoma, Texas, Louisiana
West:	
Mountain	Colorado, Idaho, Montana, Utah, Wyoming, Arizona, New Mexico, Nevada
Pacific	California, Oregon, Washington, Alaska, Hawaii

There was considerable discussion during the early stages regarding the breadth and scope of the study. While we have identified specific segments and regions of high growth, for the most part we have attempted to cover all regions and all segments of the U.S. construction market. The CCA emphasized on many occasions that they did not wish to pre-judge (through focussing on only a few opportunities) what may and may not be of interest to their member firms. At the start-up meeting, William Clarke of External Affairs and International Trade outlined a similar mandate as that desired by the CCA, "a study to be of equal interest to Fredericton (New Brunswick) contractors looking toward Maine and Trail (British Columbia) contractors interested in Spokane"[1]. Thus, while we have encountered many documents stating that construction in a certain region and segment is expected to grow, say, for two years, we have attempted to keep such information at a minimum. Typically, information that a certain market is booming indicates that it may already be too late for Canadian firms to capitalize on the boom. We feel that it is more important that Canadian firms identify stable regions which make sense for them, and enter these regions while keeping in mind the information and advice provided in this study.

Report Organization

Including this Section and the Executive Summary, this report comprises eight sections and nine appendices. Section Two discusses American construction trends in a fairly general manner. Sections Three and Four of the report examines the various regions and construction segments (listed in Table 1-2) of the American market, identifying some segments and regions as offering particular growth potential. The study also details the availability, wages, unionization and other characteristics of the construction labourers and trades and these are the subject of Section Five. Section Six discusses matters of taxation and insurance. Information on market constraints and penetration strategies was considered essential by the CCA to helping Canadian contractors penetrate the U.S. market and the report therefore addresses these issues (in Section Seven). Section Seven also draws upon the previous U.S. market experiences of Canadian contractors.

As requested by the Department of External Affairs and International Trade, the study summarizes trade shows, trade journals, associations, and other information sources of potential value for aspiring entrants into the U.S. market - this information is included in the Appendices. Descriptions of prominent local competitors as well as information on regional costs and taxes is also provided in the Appendices.

---

[1]A prime goal of the government, in sponsoring this study, is to increase the number of Canadian firms who pursue contracts in the border states - "the company with a gravel truck and portable cement mixer in Coutts, Alberta who can lay foundations in northern Montana".

The Appendices also list the numerous Canadian and American sources which have provided the basis of the report`s content. In all, some sixty American publications, fifty American interviewees, fifteen Canadian interviewees, and twenty Canadian publications were consulted in preparing the report. While most sources were quite cooperative, two U.S. sources were particularly helpful. The U.S. government, mainly the Department of Commerce, and the Associated General Contractors were both very generous with their time and information, in the name of increased competition.

Table 2-1: Canadian and American Economic Data

	Canada	United States
1987 Per Capita GNP ($US)	16,200	18,500
1989 Labour Force (million)	12	115
1989 Prime Rate (%)	10.5	9.3
25-Year Growth in GNP (% annually)	4.3	3.1
5-Year Growth in GNP (% annually)	4.3	4.0
1988 Population (million)	25.8	245.8
Cities with >1 million population (number)	3	41

SECTION TWO: THE NATIONAL CONSTRUCTION SCENE

2.1 ECONOMIC CHARACTERISTICS

The gross national product of the United States, at $C 5800 billion in 1987, was approximately 10.6 times larger than that of Canada. As summarized in Table 2-1, the American economy has expanded at a real[1] annual rate of 3.1 percent during the past quarter century, which is a considerably lower rate than the real Canadian growth figure of 4.3 percent during the same period.

Interest rates are the prime levers for controlling economic growth in both Canada and the United States. Interest rates in Canada generally move in parallel to those in the United States because of the large amounts of capital which freely moves from one economy to the other and the potential impact upon the Canadian currency which results from a large discrepancy in interest rates. Rates have declined in both countries from the 20 percent range in 1981 to prime rates of 9.3 percent and 10.5 percent respectively in the United States and Canada in 1989. However, interest rates, particularly in Canada, have risen during the latter months of 1989, making the spread between Canada and U.S. rates higher than that which traditionally exists, thus strengthening the Canadian dollar and making exports less competitive. Pressure will likely grow during 1990 to reduce the Canada-U.S. interest rate spread.

In recent years, both economies have enjoyed strong growth. During the past five years, Canadian and American economic growth has averaged 4.3 percent and 4.0 percent respectively. As a result, unemployment has decreased from almost ten percent of the U.S. labour force in 1982 to around six percent in 1988, and from eleven percent of the Canadian labour force to below eight percent during the same period. The unemployment figures perhaps understate the growth somewhat as the size of the labour force, on which the unemployment figures are based, has also grown during this period.

The majority of these new American jobs have come from firms with less than 100 employees. Indeed, some 95 percent of new jobs created during the past six years have been from small start-up businesses. Nineteen of every twenty new jobs have been created in the service sector and currently approximately 70 percent of all American jobs are in the service sector. As in Canada, there has been a clear shift of employment in the last decade from manufacturing to services; total

---

[1] meaning the growth in Gross National Product discounting inflation.

Table 2-2: The Regions - Population Rankings, Population Growth and Per Capita Income

	Population in 100,000			Percent Growth in Population		Per Capita Income*
	1988	1980	1950	1980-88	1950-88	1988
United States	***2458***	***2265***	***1513***	***9%***	***62%***	***17055***
Regions						
South Region	**848**	**753**	**471**	**13%**	**80%**	**15861**
Midwest Region	**599**	**590**	**444**	**2%**	**35%**	**16594**
Northeast Region	**506**	**492**	**394**	**3%**	**28%**	**18735**
West Region	**505**	**432**	**202**	**17%**	**150%**	**17980**
Divisions						
South Atlantic	*426*	*369*	*211*	*15%*	*102%*	*15798*
E-N Central	*422*	*417*	*303*	*1%*	*39%*	*16611*
Mid-Atlantic	*376*	*369*	*301*	*2%*	*25%*	*18670*
Pacific	*371*	*318*	*151*	*17%*	*146%*	*18652*
W-S Central	*269*	*237*	*145*	*14%*	*86%*	*17100*
W-N Central	*177*	*173*	*141*	*2%*	*26%*	*16554*
E-S Central	*153*	*147*	*115*	*4%*	*33%*	*13856*
Mountain	*134*	*114*	*51*	*18%*	*163%*	*16119*
New England	*130*	*123*	*93*	*6%*	*40%*	*18923*

Source: U.S. Department of Commerce, Bureau of the Census; July, 1988.
***Income defined as gross state product**

American employment in services doubled during the seventeen year period from 1969 to 1986, versus a six percent decline in manufacturing employment.

While the trend toward service employment has had a positive impact upon retail, office and other forms of construction, the impact has not been directly correlated. Much of the growth in service sector employment has been absorbed through the operation of existing facilities for longer service hours and for longer work-weeks[1].

Service sector jobs in the United States are expected to expand by 16 million to a total of 76 million by the end of the century,[2] with long-term commercial construction being a main beneficiary. Environmental issues are also becoming increasingly prominent and testing, cleanup and construction services will be associated with this growing trend.

As in Canada, the American economic growth and construction activity has not been equally strong in all regions. New Hampshire, for example, with less than two percent unemployment, has had strong economic and construction activity during the 1980's, in line with the New England region's booming high technology and service industries. At the other extreme, Texas has seventeen percent unemployment, and has had poor levels of construction activity as a result of the slump in oil prices. While the population and economic clout has been migrating south and west during the past two decades, the "rust-belt" has been experiencing an economic renaissance and is expected to continue its strong economic growth during the next decade.

2.2 DEMOGRAPHIC CHARACTERISTICS

The population of the United States has not shown strong growth - expanding at about one percent annually in recent years. Total population is forecast to grow from 246 million in 1988 to 260 million in 1995, which suggests limited growth in new residential construction. The largest population region is the South with 34 percent of the total population, followed by the Midwest with 24 percent and the Northeast and West Regions each with 21 percent of the nation's population. Growth in population has been highest in the western and southern regions during the past decade.

---

[1] convenience stores, fast food outlets, retail stores, financial institutions and other industries are increasingly offering their services on a 24-hour day and/or seven-day week basis.

[2] with the fastest growth expected in high skill occupations such as engineering, medical technology, computer programming, and systems analysis.

Table 2-3: Percentage Breakdown of New Construction in the U.S.

- residential (48 percent of total new construction activity) including;
  - single-family (28 percent);
  - multi-family (6 percent);
  - home improvement (14 percent);

- private non-residential (32 percent) including;
  - office space (6 percent);
  - manufacturing facilities (3 percent);
  - electric utilities (3 percent);
  - hotels and motels (2 percent);

- public works (20 percent) including;
  - highways (6 percent);
  - sewers (3 percent).

Source: 1989 U.S. Industrial Outlook; U.S. Department of Commerce

Potential entrants should view the American market as a collection of regional markets of significant wealth and population. For example, there are 41 metropolitan areas in the U.S. which have populations exceeding one million, compared to only three in Canada. Five of the nine geographic divisions listed in Table 2-2 have populations exceeding that of Canada as a whole, while the remaining four divisions each exceed one-half of Canada's total population. Some thirty percent of the American population resides in the states which border Canada.

The American economy will see increasing amounts of rationalization and dislocation in coming years. The rapid technological changes, labour shortages and the aging population will force significant skills re-training requirements upon the workforce. One out of eight Americans is now over the age of 65, and this figure will rise to one-in-five within forty years. Life expectancy is also expected to rise from 75 years in 1985 to around 78 years in 2020. As with each of the demographic trends discussed above, the aging population will impact upon the types, location[1], volume and timing of American construction activity.

2.3 CONSTRUCTION CHARACTERISTICS AND TRENDS

Characteristics

The breakdown of the new construction market in the United States, illustrated in Table 2-3, is quite similar to that which exists in Canada, where 47 percent of new construction is residential, 37 percent is private non-residential, and 16 percent is public construction. It is felt that the larger share of American military construction accounts for much of the difference in public construction, while Canada's higher orientation toward resource industries contributes to its higher share in private non-residential construction.

As indicated in Table 2-4, there was approximately $US 400 billion worth of new construction put in place in the United States in 1988[2]. The value of new construction put in place declined slightly in 1988 from the record level of 1987, as the small increases in public works construction could not match the declines in private construction.

---

[1]For example, regions such as Arizona and Nevada, and segments such as nursing homes and retirement communities will see more activity.

[2]There are various economic spinoffs which increase the effect of the actual construction expenditures. In the United States, it is estimated that each million dollars of construction generates a total of $3.61 million in economic activity across all industries and services, while creating 49 jobs.

Table 2-4: Value of New Construction Put in Place in the United States, 1982-89
(in billions of 1982 U.S. dollars except as noted)

Type of Construction	*1982*	*1987*	*1988*	*1989*	*1988[1] ('88$US)*
Total new construction	246.6	349.0	347.6	342.3	401
Residential	84.7	171.3	167.9	165.2	190
Single-family	41.5	100.7	98.7	94.7	114
Multi-family	15.5	22.4	19.0	18.8	23
Home improvement[2]	27.7	48.2	50.1	51.6	53
Private non-residential	108.1	111.7	111.7	108.6	132
Manufacturing facilities	17.3	11.6	12.3	13.5	15
Office	23.0	22.5	22.1	19.8	26
Hotels and motels	4.1	6.3	5.7	5.1	7
Other commercial	14.2	24.7	24.2	23.0	29
Religious	1.5	2.3	2.4	2.4	3
Educational	1.5	2.9	2.9	3.0	3
Hospital and Institutional	5.9	5.1	5.7	6.0	7
Miscellaneous buildings	1.7	2.8	3.1	3.1	4
Telephone and telegraph	7.1	7.6	7.6	7.4	8
Railroads	2.6	2.3	2.4	2.5	2
Electric utilities	18.3	14.4	14.1	13.7	16
Gas utilities	5.5	4.8	5.0	4.8	5
Petroleum pipelines	0.4	0.3	0.3	0.3	.4
Farm structures	3.7	1.6	1.5	1.4	2
Miscellaneous structures	1.3	2.4	2.4	2.4	3
Public works	53.8	66.0	68.1	68.5	80
Housing and redevelopment	1.7	1.3	1.2	1.2	2
Federal industrial	1.6	1.2	1.4	1.3	1
Educational	5.9	7.5	8.3	8.7	10
Hospital	2.0	1.9	1.9	2.0	3
Other Public Buildings[3]	5.8	9.6	9.7	9.9	11
Highways, Streets and Bridges	16.3	19.8	21.4	21.8	26
Military facilities	2.2	3.7	3.7	3.6	4
Conservation and development	5.0	4.8	4.6	4.2	5
Sewer systems	5.5	8.3	7.6	7.3	9
Water supplies	2.9	3.3	3.4	3.6	4
Miscellaneous public structures[4]	4.9	4.7	4.9	4.9	5

Source: 1989 U.S. Industrial Outlook; U.S. Department of Commerce, International Trade Administration

---

[1]this column lists current dollar expenditures in 1988.
[2]home improvement excludes do-it-yourself maintenance and repair expenditures which are estimated to total $US 50 billion in 1988.
[3]includes courthouses, police and fire station, prisons, passenger terminals, civic centres.
[4]includes recreation facilities, power generating facilities, transit systems, airfields.

According to the most recent *Census of Construction Industries*, there were a total of 1.4 million construction companies[1] in the United States in 1982, three-quarters of which were individual proprietorships. Slightly over four thousand of these firms had annual receipts of greater than $US 10 million, collectively accounting for 36 percent of industry revenues. The average "large" firm (greater than $US 10 million in annual revenue) conducted $US 22 million worth of business in 1982, an amount which has likely reached $US 25-30 million as of 1988.

When adjusted by the usual factor of one-tenth to reflect the relative population, the Canadian corporate structure is quite similar to that in the United States. For example, as of 1988, there were around 130,000 construction firms in Canada. The 650 large firms (with sales over $US 10 million) account for 34 percent of total industry revenues. These "large" Canadian firms each average $US 20-25 million in annual business, an amount very similar to the average "large" firm in the United States. Due to the sizeable number of individual proprietorships, the average annual billing of a Canadian construction firm is only about $300,000, similar to the average American construction company. One Canadian contractor expressed the opinion that American firms will travel greater distances than Canadian firms to pursue contract work, and that competition in Canada is therefore more localized. However, this opinion does not mesh with the view of certain U.S. executives that the American industry has become highly regionalized during the past two decades, nor with the information suggesting that American contractors in general are of comparable size to Canadian firms.

American construction firms are not as dominant on the world stage as in former years. The total value of international contracts won by those U.S contractors listed amongst the world's 250 largest construction firms has decreased in value from $US 44 billion in 1980 to $US 23 billion in 1986, largely due to the rise of Japanese and European firms. This total dropped further in 1987, before rising to $US 26 billion in 1988.

In addition to losing market share internationally, American firms are being faced with renewed competition in their own markets. Many of the largest international construction contractors have entered the American market during the past five years, largely because of declining prospects in Third World markets. This has been accomplished mainly through buying existing American firms, although many companies have also entered through establishing branch operations. Foreign-owned construction firms won $US 8.9 billion worth of American construction contracts

[1] Includes developers and subdividers

Table 2-5: Foreign Contractors with the Most U.S. Construction Work in 1985

Company/Country	U.S. Affiliate	Connection	U.S. Contracts *($US million)*
Holzmann - Germany	Jones - North Carolina	acquisition	1571
Kumagai Gumi - Japan	Kumagai - California	branch operation	574
Davy - England	Davy McKee - Pittsburgh	acquisition	500
Archirodon - Switzerland	Fuller - New York City	acquisition	457
Kajima - Japan	Kajima - New York	branch operation	315
Bilfinger - Germany	Fru Con - Missouri	acquisition	287
PCL - Canada	PCL - Denver	branch operation	270
Ohbayashi - Japan	Ohbayashi - Los Angeles	branch operation	239
JCC Johnson - Sweden	Santa Fe Engineers - Calif	acquisition	217
SAE - France	Spaw - Houston	acquisition	197
Bovis - England	BIL - Oakland	branch operation	195
SAE - France	Carlson - Mass	acquisition	191
Shimizu - Japan	Shimizu - New York City	branch operation	135
SAE - France	Heller - Sacramento	acquisition	132
Mitsubishi - Japan	Mitsubishi - New York City	branch operation	128
SAE - France	Pinkerton - Atlanta	acquisition	104
Bovis - England	Lehrer - New York City	acquisition	na

Source: International Construction Week, McGraw Hill, 1986.

in 1987, an amount equal to 3.5 percent of all U.S. construction contracts that year, and more than double the $US 3.6 billion level recorded in 1982. As indicated in Table 2-5, German, British, Japanese and French companies accounted for the majority of this activity. PCL, the largest Canadian player in the U.S. market, ranked eighth amongst foreign contractors, with American contracts of approximately $US 270 million (see also Appendix F).

Reduced technological superiority and productivity[1] are often listed as two reasons behind the declining international dominance of American contractors. American research and development expenditures[2] in the construction industry are painted unfavourably in *Research and Development in the U.S. Construction Industry* relative to other countries, as indicated in Table 2-6. It is estimated that one Japanese contractor alone (Shimizu) has an annual research and development budget of $US 40 million. Shimizu and other international companies are felt to have taken much of the technological initiative in the international construction research scene during recent years.

The United States construction market has also evolved into more of a regional marketplace over the past twenty years. Two decades ago, large national firms moved around at will and worked in many different states. One executive with whom we met worked for a firm which, during his period twenty years ago, had simultaneous jobs in California, Wyoming, Colorado, Michigan, Texas, Kentucky, the Carolinas, Georgia and Florida. Currently, firms, in his view, concentrate on fewer regions and tend not to move people from region to region. The evolution of regional firms sufficiently large to handle virtually any type of job has forced many of these national firms to retrench, sell out, or simply disappear. The trend toward two income families has also played a role in causing large firms to adopt a "regional contractor" strategy by opening several autonomous regional offices, rather than continuing to move people around the country.

Trends

There are many trends and characteristics which are discussed in our review of individual segments and regions. Many of these trends often hit the Canadian market after affecting the American market, and thus may be of interest even to Canadian firms not exploring the U.S. market.

---

[1] A 1980 study by Lester Thurow states that American construction productivity grew at 3.4 percent annually between 1948-1965, before dropping dramatically to -1.8 percent annually from 1965-1972. Productivity gains since 1972 have been minimal.

[2] Canada's construction R&D is primarily centered in the National Research Council's Institute for Research in Construction. Estimates of Canadian R&D are not available.

Table 2-6: Construction Research & Development Spending in Selected Countries

Industry	*As Percent of Construction Revenue*
Sweden	.57
Denmark	.53
United Kingdom	.45
Japan	.28
Netherlands	.21
New Zealand	.14
United States	.12
Australia	.07
China	.03

Source: *Research and Development in the U.S. Construction Industry*

Among the more notable national construction-related trends are:

- a **dwindling supply of young workers** available to the construction industry because of demographic trends and low unemployment rates. Barring substantial productivity gains, tight labour markets and labour quality could become major problems during the next decade. Growing concerns regarding the availability of trained workers have led to the formation of a coalition of various construction associations to examine training issues. Firms are paying increased attention to hiring and retaining key people, and to recruiting and training entry-level field personnel. For example, Korte Construction of St. Louis has opened its own "university" which offers courses in marketing, production, control and other areas for its current enrollment of over 200 office employees and union craftspeople. Substance-abuse programs, physical and mental health programs, and minority hiring and training programs are also human resource areas of note amongst American firms. Non-union firms, not having access to union halls, are increasing their levels of contact with other companies, in order to move high-demand labourers from one project to another in an efficient manner;
- an anticipated **stabilization in the cost of liability insurance** during the next several years, although this largely depends upon future legislative and judicial developments. As in other industries, matters of insurance, litigation and liability are more prominent in the American construction industry than in its Canadian counterpart. Part of the stabilization in insurance costs is felt to be attributable to an increasing trend toward arbitrated settlements;
- the increasing prevalence of **Employee Share Ownership Plans** (ESOP's) amongst construction firms. For example, firms in Maryland and North Carolina recently implemented employee ownership plans - there are typically 2-3 of these implemented amongst major construction firms in the U.S. each month;
- the increasing desire by private project sponsors for the constructor to take **equity positions** in the project in order to spread the risk. For example, one of the country's largest contractors, Bechtel, has become active in assuming equity position in its projects.
- related to the above, there is a trend toward the **privatization** of infrastructure developments, as city and county governments attempt to find funding for road-tunnel, sewage and water treatment projects.
- there is an increase in the level of **contracting out** by governments. In the view of certain industry players, governments will increase their level of contracting construction to

private firms, rather than using government employees, because of the resulting efficiency gain and deficit reduction.

- there are some notable **financial and operating trends** in the construction industry, including increased attention to cash management and collecting receivables, decentralization of accounting and finance to the job level rather than headquarters level, increased surety bonding problems, and increased devotion of management time toward matters of dispute resolution and claims administration;
- the **Savings and Loans** industry has suffered major financial problems since the high interest rate years of 1981 and 1982. A rescue package recently agreed upon by Congress is currently being implemented and projects the expenditure of $US 150 billion (considered conservative by many sources) through the Resolution Trust Corporation (RTC) to bail-out several hundred banks over the next thirty years. This is relevant to the construction and development scene to the extent that an estimated $US 300-500 billion worth of real estate holdings (nursing homes, theatres, marinas, houses) will be released from bank's portfolios during the next several years - conversion of these holdings to more profitable usages may be an increasingly important activity in the United States. For example, the RTC currently holds some 30,000 parcels of commercial and residential property in 35 states destined to be put on the market in the near future, and this will obviously affect construction activity in these regions. Some $6.4 billion worth of these properties are located in Texas and Oklahoma;
- concern regarding **environmental issues** is rapidly growing and tends to be more advanced in the United States than in Canada, particularly in California and New England. Environmental impact studies are becoming increasingly rigid and agencies such as the South Coast Air Quality Management Agency are becoming more active in altering building designs and monitoring construction. Associated with increased environmental concern is a movement toward the strategy of "mitigation", wherein the development of certain projects would be approved in return for equivalent concessions on the part of the developer in other areas;
- labour shortage problems may lead to **increased mergers and acquisitions** in order to improve the workforce efficiency and flexibility of particular companies. Tax changes that make it more expensive to transfer construction businesses from older to younger generations may also prompt increased selling and acquiring activity. Industry officials also expressed the view that publicly-held construction firms tend to under-perform the market and as a result often end up going private, again possibly stimulating merger and

acquisition activity (in this regard, public offerings will not be a common trend in the construction industry). Finally, foreign firms will increasingly penetrate the American market via acquisitions and this will also contribute to M&A activity in the construction contracting industry. The construction materials segments, including cement, aggregates, ready-mix and asphalt, have seen significant acquisition activity during the past two years and this trend is expected to continue, even at quite high prices;

- the **increased use of robots** in construction. For example, robots are expected to handle heavier loads and work in dirtier environments, and it is projected that robot use will spread from hazardous waste cleanup into areas such as trenching, grading, and tunneling;
- information technology **systems-related trends** include the use of computerized scheduling applications by a wider range of U.S. companies, as a selling tool, as a communication tool for field managers and estimators, and as a method of minimizing response time to sudden changes in the construction schedule. Field supervisors are increasing their use of on-site management computers. Contractors are faced with a demand for more structured, detailed and accurate billings and are increasingly using computers to assist them in this area. Many contractors are using computers as part of the estimating process. Those firms not yet computerized are gradually establishing databases and training estimators to use their systems in the future. Fully integrated job costing/accounting systems are common in the American construction scene, while project management software should see rapid acceptance over the next few years. Software for integrating the cost-bidding packages of the contractors with the designing packages of the designers will be increasingly common in future years;
- construction industry **technological advances** are expected in areas such as seismic design of bridges and buildings and in fire modeling. Construction material advances will also be increasingly evident during the next few years. For example, cement types which develop the strength of seven-day portland cement in only four hours are nearing commercial application. These require less formwork, and can be placed at colder wintertime temperatures;
- shifts toward **"team approach" construction,** wherein the private owner selects the contractor and designer as soon as the project is formulated, and away from the traditional "hard bid" approach where the architect is first hired and the subsequent design is put up for bid without any contractor input. This trend stems from a belief that projects designed with contractor input will proceed more smoothly. Not surprisingly, the team approach is more commonly adopted on complex projects such as high-rise office developments. By

providing pre-construction services, the contractor's profit from the job may increase substantially. The increased role of contractors in proposing "better ways to do the job", more formally known as value engineering, generates savings which are often split between the owner and the contractor;

- an increased role for **economic development agencies**, particularly in marketing their regions and interests to potential investors. These agencies, of which some 7500 responded to a survey by *Site Selection* magazine in April of 1989, are using expanding budgets to develop computerized databases, provide financial assistance, conduct site studies, and even construct buildings. They represent a good regional information source and contact point for Canadian contractors interested in particular regional markets (see the April '89 issue of *Site Selection*);
- the existence of **impact fees** paid by the developer when obtaining the building permit to help finance municipal improvements associated with the development. Impact fees already exist in about twenty percent of the areas served by economic development organizations. They are of more relevance to developers than contractors;
- progressive contractors in the U.S. are allocating **group planning time** toward identifying ideal customers, markets and projects. Emphasis upon solid market planning and execution, strong long-term public and client relations, the use of some non-technical people for planning and marketing, the use of women in marketing and sales, and the establishment of written marketing plans are described in a study by *FMI Marketing Services* as leading to dramatically improved results for those firms adopting such practices;
- the **increased suburbanization** of corporate America. To avoid inner-city traffic, high crime rates, and decaying educational systems, corporations have increasingly been following employees in moving to the suburban areas.[1] Lower rental rates, lower real estate taxes, free parking, and worker satisfaction have also been factors driving this trend. The scale of the shift has been such that in 1949 there were only one hundred suburban industrial parks in the United States, whereas there are 500 industrial parks in the Chicago suburban area alone in 1989. The "edge city" trend is well symbolized through the success of Los Angeles and its satellite towns in entrepreneurial growth and in attracting

[1]In 1967, 34 percent of residents in the thirty largest American cities lived in suburbia. By 1983, this figure had risen to 44 percent. In 1967, 11 percent of employees in the thirty largest American cities worked in suburbia. By 1983, this figure had risen to 18 percent. While central core population declines had stopped by 1983, it is felt that central core employee declines had not stopped.

immigrants, new businesses and increased employment. The suburbanization trend is more pronounced in the U.S. than in Canada;

- the response by urban areas to the above trend has been the funding and encouragement of **re-vitalization and renewal projects in the downtown** core. Retail projects, particularly downtown malls, have been a common method of inducing other downtown developments and of preserving historic areas. Consistent with this trend is the increased role of Redevelopment Agencies in spurring this growth. For example, the influential San Francisco Redevelopment Agency has an annual budget of around $US 100 million and overseas some $US 700 million in annual construction and rehabilitation of housing, offices[1], parks, community centres, and infrastructure in depressed neighbourhoods. These agencies are typically funded by city tax increment bonds. In line with the potential in this area, a recent study conducted for the Canadian architectural industry identified restoration and revitalization as an important area of opportunity for Canadian firms in the U.S. market;
- the **increased domination of small business** in the area of overall employment creation and its effect upon employment turnover, company failures, office and industrial construction, and other issues. Construction of commercial, office, and industrial space is increasingly oriented toward small clients as large, labour intensive facilities will not be centered in the United States as much as in past decades.

2.4 CONSTRUCTION OUTLOOK

The economic forecasts in the *U.S. Industrial Outlook* project conditions that are generally favorable for construction during the early-to-mid 1990's - continued economic growth, fairly stable interest rates, slow inflation, declining federal budget deficits, and declining trade deficits.

However, for the next few years, growth in new construction in the U.S. will be lower than overall economic growth, partly because of the need to absorb the current oversupply of commercial buildings. In addition, high real interest rates will inhibit construction, particularly in the residential segment, and the federal budget deficit will likely limit public works spending, despite the well-publicized need for additional infrastructure investment[2].

---

[1] Olympia and York is currently completing two office buildings in this project.

[2] A 1988 Merrill Lynch review of the infrastructure situation in the U.S. described the stock of public works facilities as markedly deteriorated, entailing serious ramifications for the productive functioning of the economy. This study is reviewed in Section 4.3.

On the positive side, the recovery of the U.S. manufacturing sector and the expected decrease in the trade deficit will continue over the long term, thereby boosting demand for industrial construction. Construction of medical facilities will increase in certain regions because of demographic and institutional factors. Maintenance and repair work, both residential and nonresidential, are expected to increase more rapidly than the overall economy, as the existing stock of structures becomes older and more extensive, and as international competition continues to force modernization and other adjustments upon American business. School construction is expected to increase as the children of the baby boom generation progress through the system, and many universities also have ambitious renovation and expansion plans. Water-related facilities and systems are expected to require high levels of expenditure, particularly in the northeastern region where leaks are a problem, and in the western region where severe water shortages are occurring.

The following Section discusses the outlook and characteristics of individual construction segments in more detail.

SECTION THREE: ACTIVITY AND OUTLOOK BY SEGMENT

This section discusses the characteristics, trends and outlook for the residential, nonresidential and public construction markets of the United States.

3.1 RESIDENTIAL CONSTRUCTION

Introduction

The American residential construction scene is quite localized and competitive, the barriers to market entry are low and thousands of small operations characterize the industry. However, numerous large builders, completing more than three thousand houses per year, also exist and they are quite sophisticated in their operations.

The number of housing starts nationwide decreased in 1988 and is projected to decline further to about 1.40 million units in 1989. However, the value of residential construction is supported by increases in both average house size, and home improvement expenditures, and has continued to grow in recent years.

3.1.1 Single-Unit Housing

Outlook - Slight Decline over Next Five Years

The decline in mortgage rates in the United States, from seventeen percent in 1982 to ten percent in 1988, has contributed to seven consecutive years of strong residential construction activity. Recent increases in interest rates have slowed activity somewhat, and this downturn is expected to continue during the next five years as the seven-year boom has satisfied much of the pent-up demand for housing that had built up earlier in the decade. Construction of single-family units is particularly sensitive to interest rate movements and will decrease more than multi-family unit construction. Expenditures on home improvement and repair are expected to remain strong throughout the 1990's, as the housing stock ages.

As in Canada, demographics are a main factor driving the activity of the housing market. Those born during the fifteen post-war years purchased their initial homes at a time of low prices and low interest rates and are currently trading up to larger homes. Those entering the housing market more recently face higher prices, higher interest rates and greater difficulty in purchasing houses. The latter group may generate pent-up demand for housing during the 1990's.

The construction of relatively inexpensive, townhouse-style, single-family homes of less than five units has decreased since 1985, and is expected to continue to decrease as buyers favour larger

homes. The supply of used starter homes is strong and will increase as current homeowners move into larger houses. The strongest category of demand for new housing is expected to be for trade-up, larger single-family housing. Thus, even if the number of single-units houses built does decline marginally during the next few years, the total value may increase by a small amount.

3.1.2 Multi-Unit Housing

Outlook - Slight Decline over Next Five Years

The multi-unit structures category, which is comprised roughly 80 percent apartment buildings and 20 percent condominiums and low-rises, enjoyed an increasing amount of activity during the ten year period up to 1985. Indeed, tax incentives and investor demand combined to result in overbuilding and high vacancy rates in multi-unit housing, particularly in the south. The tax reforms implemented in 1986 have eliminated most of the tax advantages, causing activity in this area to decline some 25 percent in three years. Demographically, there are decreasing numbers of people in the 20-34 age group, the group most likely to rent, and this will impact negatively on apartment construction. The overall demand for multi-unit housing construction is expected to decline in future years.

3.1.3 Mobile Homes

Outlook - Slight Decline over Next Five Years

Shipments of mobile homes have declined 26 percent from 1983 to 1988. Shipments are expected to decline further in 1989 by about five percent, as the number of first-time home buyers in the 25-44 age range, the most common purchaser of mobile homes, continues to decrease. In the long-term, a new market of retired people of moderate income is expected to emerge as potential buyers of mobile homes. The southern states represent a major regional market for these units, although economic difficulties arising from low oil prices have caused a substantial decline in shipments in the region.

3.1.4 Residential Upkeep

Outlook - Continued Increase over Next Five Years

This segment, which formally excludes do-it-yourself activity, has enjoyed five strong years and expenditures are expected to increase through the 1990's. Expenditure in 1988 totalled approximately $US 50 billion, of which sixty percent represents actual construction expenditures, and forty percent represents maintenance and repairs. Including do-it-yourself activity, it is estimated that Americans will spend a total of $US 105 billion in 1989 on residential upkeep, and

that this figure is expected to outstrip spending for new residential construction by the mid-1990's. Remodelling expenditures are expected to double over the next decade.

The anticipated growth of the segment is a result of four main factors, namely the increasing size and age of the housing stock, the rising demand for energy efficient structures, home modification to accommodate high-technology innovations, and the increased availability of home equity loans. In addition to these factors, some two-thirds of expenditures in this category occur within one year before moving out or two years after moving in, and expenditures therefore also track housing resales to a certain degree.

3.2 PRIVATE NONRESIDENTIAL CONSTRUCTION

Introduction

The 1988 value of construction in this segment totalled $US 132 billion (equivalent to 1987 levels although eight percent below the record of 1985) of which seventy percent was for buildings and thirty percent for other structures. Strong commercial construction activity during the 1983-88 period has resulted in high vacancy rates for office buildings, stores, hotels, and warehouses, and these rates are expected to depress the demand for new construction in these segments until supply and demand for commercial space are brought into balance.

Given the continued (if slowing) economic growth and fairly stable interest rates currently being forecast, the decline in private nonresidential construction is expected to be relatively mild, lasting for around three years and followed by a recovery during the early 1990s. Based on vacancy and economic considerations, the *Economic Outlook* projects that shopping center construction will rebound fairly quickly, whereas office construction will probably be the last category to recover. Industrial construction is expected to increase during the next few years, as firms invest to improve U.S. manufacturing competitiveness and respond to the capacity constraints induced by an improving American trade balance. While private hospital construction has been constrained by cutbacks during the past couple of years, spending in the medical construction area overall is expected to display a long-term upward trend as the population ages and stresses are placed upon the existing stock of medical facilities.

The following paragraphs examine the major private nonresidential segments in further detail.

3.2.1 Maintenance and Renovation

Outlook - Strong Increase over Next Five Years

The need to modernize the American capital stock will provide strong demand for commercial remodeling. There are no official government data on the size of the investment in nonresidential building remodeling, although some private analysts estimate in *ENR Magazine* that these expenditures are equal to about one-third of the total value of new construction of private nonresidential buildings. This estimate would place the American private nonresidential maintenance and renovation market at around $US 45 billion annually, an amount approximately equal to the entire construction contractor market in Canada.

The renovation market appears to have grown rapidly during the 1980s and, given the aging stock of American industry[1], and the fairly high debt loads of government, industry and consumers, it is expected that remodeling and renovation expenditures of both residential and nonresidential properties will be stronger than new construction for several years to come. For example, a study by *FMI Marketing Services* projects that the retail modernizing, industrial retrofitting and office re-purposing market will grow at 14-15 percent annually into the 1990's. Much of the work, such as revamping office building interiors, involves specialized trades rather than general contracting.

3.2.2 Industrial Construction

Outlook - Increase over Next Five Years

Industrial construction put in place increased more than five percent in 1988 and further gains in industrial construction are expected during the next few years, stemming from the tighter capacity and increasing profitability of many manufacturing industries[2]. The extent to which manufacturing plants will be modernized or replaced depends on factors such as international competitiveness, interest rates, business profitability, technological developments, and economic growth. The U.S. trade deficit has served to constrain industrial construction during much of the 1980's[3] and anticipated reductions in the deficit, through stronger exports, will provide a further boost to industrial construction.

---

[1] buildings more than 40 years old represent 40 percent of the U.S. nonresidential building market - a figure which will reach 50 percent within six years.

[2] While industrial construction activity is expected to be strong, Canadian firms should note that manufacturing facilities often present lower profitability for contractors, particularly if corporate clients have built many facilities over previous decades. In these instances, the clients often know the costs and requirements better than the contractor and profit margins may be squeezed as a result.

[3] The 1988 trade deficit in manufactured goods of about $105 billion is estimated to translate into manufacturing construction expenditures $US 2 billion below what they would be in a balanced budget situation.

The need to modernize the stock of existing buildings and other structures will also stimulate industrial construction. Deferred expenditures during the 1982 to 1989 economic growth period have necessitated capital investment, the majority of which will be in plant modernization. There is a considerable degree of rationalization, volatility and adjustment currently affecting the industrial space market in the United States (as in Canada). The lack of inter-changeability of industrial space (unlike office space, an industrial facility in one manufacturing sector is not always easily converted for usage by another manufacturing sector) means that new facilities will continue to be required even in areas where a rudimentary analysis may indicate a significant surplus of industrial space.

An examination of manufacturers during the 1983-88 period by Cognetics indicates that large, high-growth manufacturers have been expanding in both the Sunbelt and Rustbelt in roughly equal numbers during this period. Contrary to popular perceptions, the study also found that two-thirds of small, high-growth firms have been expanding in the Rustbelt area, thus giving it an entrepreneurial nature.

In a major study entitled *U.S. Industrial Space Needs in the 1990's*, Cognetics observed that 28 manufacturing sectors have been among the forty fastest growing industrial sectors[1] in the U.S. economy during the 1980's. Cognetic`s view is that the (much-publicized) struggles of some larger U.S. manufacturing firms have largely served to open up niche market opportunities for smaller companies. The overall effect on the American industrial scene, according to Cognetics, has been strongly positive. Often riding the success of a new technology, these firms typically require new facilities for manufacturing, research and/or distribution. Indeed, the study also observed the fact that international trade accounts for twice the percent of GNP in 1989 as it did in 1960. This has impacted strongly upon the role of distribution in the U.S. economy. Harbours, airports, warehouses, and other distribution facilities are in need of investment and present strong development possibilities.

In reaching a generally optimistic scenario for future industrial space needs, the Cognetics study also recognized the fact that past speculation has been primarily confined to office space rather than industrial space and that industrial vacancy rates are thus more reasonable, fundamentally based, and in many regions quite low.

---

[1]measured in terms of the percent of the sector's total firms that are growing rapidly.

According to ENR Magazine's *1989 Outlook*, auto-related industries are expected to be strong industrial contributors during the next half-decade. After completing many significant production facilities in the mid-1980's, the domestic and foreign auto companies are now adding parts fabrication and distribution centers[1]. Typical recent examples include a $US 375 million Chrysler assembly plant in Detroit and a $US 40 million Ford painting facility in Cleveland. In addition to auto-related activities, other areas of projected high industrial construction expenditures include food and beverage facilities, pulp and paper mills, steel and aluminum investments, pharmaceutical plants, and petrochemical facilities. Expenditures of a more equipment-intensive nature include the factory automation and computer integrated manufacturing investments which many companies will be making during the next decade.

The high technology industries are expected to be among the faster growing segments of the economy. The June '89 issue of *Site Selection* predicted the location of future Research and Development clusters based on a number of factors, including the regional venture capital, educational, quality of life and political considerations. Among its selections as potential high-technology growth areas through the year 2000 are: Tucson, Arizona; Gainsville and possibly Fort Myers, Florida; Atlanta to Athens, Georgia; Lafayette, Indiana; Lexington, Kentucky; Kansas City, Kansas; Lincoln, Nebraska; Hancock County, Mississippi; Denver, Colorado; Princeton, New Jersey; and Sacramento, California.

Vacancy rates are another determinant of industrial construction, although the linkage between low vacancy and new construction is not always a strong one. The national vacancy rate for industrial space at the end of 1988 was six percent. This is higher than the 5.5 percent figure for the end of 1987, and the five percent figure for the end of 1985. As indicated in Table 3-1, Houston, San Francisco, Denver, Miami, New Orleans and Chicago are major areas with particularly high industrial vacancy rates and one would expect lower industrial construction activity in these areas. Portland, Jacksonville, Baltimore, and Cincinnati all have vacancy rates around two percent, which could indicate increased industrial construction activity over the next couple of years, depending on local industrial prospects.

[1]Assembly facilities are also being added, although it is felt that the North American automotive industry is approaching a surplus situation in the assembly area.

3.2.3 Office Construction

Outlook - Decline over Next Five Years

Office developments, the largest component of the commercial real estate sector, are anticipated to show decreased activity for at least five years. As expressed by an Executive with a Washington-based contractor, "there are virtually no cities in the U.S. where the private sector office market is in anything but contraction".[1] The constant-dollar value of new office construction fell in 1988, and further declines are expected for several years because of the high current vacancy rates and the 1986 elimination of many of the tax benefits of commercial building. However, certain institutions and foreign investors will cause office construction to be active in a small number of cities and market niches, as discussed in Section Four.

The demand for new office space, as for industrial space, is closely linked to the growth in the national economy. It is projected by the *Industrial Outlook* that the drag on economic growth associated with the high debt levels currently being carried by the consumer, business and government sectors will outweigh the impact of revived exports, thus producing an economic slowdown during the next few years. However, longer-term forecasts project a continuation of the structural shift toward the service sectors such as finance, insurance and professional services. This trend augers well for office construction during the mid-1990's[2]. Similarly, while it could take five years or more to absorb the inventory of vacant office space, this process would be greatly shortened if large numbers of older office buildings were retired or converted to other uses. This is happening in some cities as part of urban revitalization programs.

The current malaise in the office segment is due more to a previous boom in supply than to a weakness in demand. In fact, demand for office space was fairly strong in 1988, as almost two million additional office workers were employed in the United States. Despite this, office vacancy rates have continued to climb in most cities because of the record amounts of new space which are becoming available. At the start of 1989, the office vacancy rate in the United States was over 16 and 22 percent respectively for downtown and suburban space, up from lows of four percent for downtown space in 1981 and eighteen percent for suburban space in 1984. Office rents have

---

[1]Particular cities such as New York, Baltimore, Boston, Cincinnati, Charlotte, and Washington may see a requirement for office buildings in the next few years. Kansas City, Denver, Southern California, Arizona, New Orleans and New Jersey are currently weak and will be particularly weak office markets for the next few years.

[2]Contracting for public-sector office buildings is more competitive than the private market, as generally any company with bonding can submit a bid for public buildings and the lowest bid must be accepted. Furthermore, these bids are subject to "wage determination", meaning that prevailing, union scale wages are typically paid, and this reduces much of the advantage held by non-union firms.

generally been falling in response to these conditions. Even if the rate of increase in white collar employment is sustained in 1989, vacancy rates will increase further as new office space reaches completion.

As indicated opposite (Table 3-2), office vacancy rates in all four regions are expected to decline through the early 1990's from their current high levels. Regional rates are currently highest in the South and West, and lowest in the East. As indicated in Table 3-3, New Jersey, Kansas City, Miami, Dallas, Denver, and New Orleans are among the cities with downtown vacancy rates greater than twenty percent. Along with Detroit and Los Angeles[1] which are awash with recently-opened office space, these cities will likely see limited office development activity for several years. Hartford, Cleveland, Cincinnati, Washington, Jacksonville, and Sacramento are prominent cities with downtown vacancy rates below 10 percent. They would, depending on structural vacancy rates and other local characteristics, presumably be candidates for increased office construction expenditures. As well, Nevada has been on a building roll for the past two years and, with substantial undeveloped space available, development dollars are expected to continue to come into the area from out-of-state sources.

In discussing prospects for Canadian contractors in U.S. office construction, one executive felt that opportunities in general were far more attractive in Europe for both Canadian and American office builders. The European office market, with the exception of Paris and London, is felt to be quite under-built, particularly in view of projected 1992-related activity, and Canada has considerable high-rise office building expertise to offer European developers, assuming high-rise buildings gain favour in some European cities.

3.2.4 Other Commercial Construction

Outlook - Decline over Next Five Years

The *U.S. Industrial Outlook* projects that commercial construction components such as hotels and shopping centres will see below-average growth during the next five years. Over-capacity and the elimination of tax incentives caused a decline in hotel and motel construction in 1988, and further declines are anticipated into the 1990's. While increased tourism and the resulting demand for

[1]Los Angeles is attempting to bring together developers, builders and community leaders to better manage the region's growth. The capacity of the city's sewer system is already strained and future development will be slowed. This will impact upon the entire state, and will re-direct efforts toward remodeling and repair work, according to industry insiders. Office construction is expected to be minimal.

rooms will ease the adjustment, it is nonetheless expected to take a few years to eliminate the current excess capacity.

Not all areas will see decline in these segments. A 1989 study by *FMI Marketing Services* identifies Boston, Norfolk, Miami, New York and Virginia Beach as regional markets that offer some opportunity in hotel and motel construction.

A similar situation, although to a lesser extent, exists for stores and shopping centers, where the negative effects of over-capacity and the recent tax reforms are expected to have filtered through by the early 1990's. Strong future residential repair and construction levels are expected to return the retail construction segment to a growth position within 3-5 years. Generally, shopping centres of the strip mall type are typically dominated by large developers such as deBartolo and Symons - margins are tight, the developers are "quite tough" and it is not a recommended area for Canadian firms unless a close relationship with the developer has been established. Enclosed shopping centres are also not a recommended segment, as the technology is felt to be quite routine and the field competitive and dominated by an almagam of small firms.

Construction of service stations and auto repair facilities has been active for several years, and is expected to remain so for a few years, because of the increasing complexity of automobiles and the growing numbers of older cars. While the number of gasoline stations will decline during the next few years, many of those that remain will invest in construction to become high-volume outlets, convenience shops and/or specialized stations.

3.2.5 Private Electric Utilities

Outlook - Decline over Next Five Years

As they did in 1988, construction expenditures in this segment are expected to decline through to the mid-1990's, because of both the widespread surplus of generating capacity and the utilities' aversion to the financial risk of new power plant construction. Risk considerations have increased during the 1980's because of more stringent regulations, nuclear power problems, investor caution, tax reform[1], and other factors.

The decline in new plant construction may be offset somewhat by growth in retrofitting of existing plants, and in expenditures on transmission systems. Canadian firms with experience in building

[1]Interest incurred during power plant construction must be capitalized rather than expensed, as of 1986.

Table 3-4: Report Card on the Nation's Public Works
(source: Report on America's Public Works)

Subject Category	Grade	Successes/ Recent Changes	Problems/ Future Weaknesses
HIGHWAYS	C+	Federal and state gas tax increases have injected new capital into the system. This, along with increased O&M spending, has improved pavement conditions. However, quality of service in terms of congestion is declining.	Spending for system expansion has fallen short of need in high-growth urban and suburban areas. Many roadways and bridges are aging and require major work. Needs of most rural and smaller systems exceed available resources. Highway Trust Fund has a sizeable cash balance.
MASS TRANSIT	C-	Federal capital grants have helped improve quality of service in some areas, but overall productivity of the system has declined significantly. Growth of transit vehicles is double the rate of increase in ridership. Diverting people from cars is increasingly difficult.	Mass transit is overcapitalized in many smaller cities and inadequate in large, older cities. Systems rarely are linked to land-use planning and broader transportation goals. Maintenance has been erratic and inadequate, especially in older cities.
AVIATION	B-	In general, the aviation system has handled rapid increases in demand safely and effectively. However, service has begun to decline in the face of increasing airport and airspace congestion as a result of strong traffic growth. The air traffic control system is currently undergoing a $36 billion modernization.	Congestion is the system's primary problem. Despite recent increases in authorizations, sizeable cash balance remains unspent in the Airport and Airway Trust Fund. The air traffic control system needs substantial upgrading to maintain safety.
WATER RESOURCES	B	Water Resources Act of 1986 made cost-sharing mandatory for many types of water projects. This change should improve project selections and reduce overall project costs.	Cost-sharing will improve efficiency but also increase local costs of water projects. Poorer communities may find it difficult to finance projects. Implementation is often excessively slow and cumbersome.
WATER SUPPLY	B-	While regional performance varies, water supply stands out as an effective, locally-operated program. Strict new standards created by the 1986 Safe Drinking Water Act will require drastic increases in water rates over the next decade.	Many public water systems suffer from pricing below costs, inability to meet purity standards, or source contamination. Storage and distribution systems are deteriorating in some older cities and supplies are limited in some parts of the West and several cities along the East coast.
WASTEWATER	C	Over 75% of U.S. population is served by secondary treatment plants. Shift from federal grants to state revolving loans may improve efficiency of plant construction. Broadened focus on nonpoint source pollution and groundwater contamination may accelerate progress toward cleaner water.	Despite $44 billion federal investment in sewage treatment since 1972, water quality has not improved significantly. This is due in part to uncontrolled sources of pollution, such as run-off from farmland and roadways. Overall productivity of secondary treatment facilities is declining, resulting in an increase in water quality violations.
SOLID WASTE	C-	Testing and monitoring of solid waste facilities are more rigorous as a result of tougher environmental standards. Waste-to-energy technology is growing as alternative to landfills. More aggressive waste reduction, separation, and recycling efforts are beginning at the local level. However, few states have moved boldly on these measures.	Nation faces significant costs of adequate and safe facilities. Limited data suggest trends toward fewer but safer landfills, rapid growth in resource recovery, and little progress toward waste reduction. Public opposition to siting all types of facilities is a major problem.
HAZARDOUS WASTE	D	Funding for site clean-up has increased five-fold since 1986, but progress has been slower than expected. Only a small fraction of the two tons of waste per capita produced in America each year is being treated safely. Major challenge is still ahead of us.	Nation has forfeited much of its opportunity to reduce waste before it is produced. Waste control legislation promotes "end-of-pipe" rather than source reduction solutions. Congressional mandates and schedules may be overly optimistic, given administrative resources. A massive backlog of poisons and needed cleanup projects faces the nation.

Canada's impressive stock of electrical facilities and transmission systems may be interested in pursuing similar American opportunities. Legislation due for consideration by the Congress in late-1989, proposes extensive reductions in sulphur and nitrogen emissions from coal plants by 1998. If passed, it would instigate large expenditures on scrubbers and other construction-intensive devices.

3.3 CONSTRUCTION OF PUBLIC WORKS

Introduction

It is estimated that local governments direct 49 percent of all public works spending in the United States, the federal government 27 percent, and the state governments the remaining 24 percent. However, as in Canada, there is considerable overlap between the various levels of American publicly funded construction projects - for example, in 1988, some 42 percent of state and local construction spending involved federally funding. Taking these transfers into account reveals that the federal government[1] paid for 12 percent of all new construction put in place in 1988, and for around one-half of total public works construction. On average, sixty percent of American public works spending is on operations and maintenance, and forty percent on capital expenditure.

Federal construction expenditures have been decreasing in recent years - as a percent of new construction put in place, federal expenditures have decreased from 22 percent in 1981 to the 12 percent figure in 1988. As a percent of total federal spending, they have decreased from 6.3 percent in 1982 to four percent in 1989. Given the federal emphasis on deficit reduction, some industry observers feel that the impetus for infrastructure and other public improvements will further shift to the state and local level[2].

Indeed, investment in American infrastructure by all public levels have generally been in decline since the 1950's. Where American spending on public works accounted for nineteen percent of government expenditures in 1950, it accounts for about 6-7 percent in 1989. No major new airport has been built in the U.S. since 1974. Of the 3.88 million miles of roads in the nation, 92 percent was built before 1960. To compound matters, in the face of these decreased capital investments,

[1]Of this total of $US 48 billion in federal construction spending, some $US 23 billion takes the form of grants, $US 9 billion in loans, and $US 16 billion in direct federal purchases. The federal government also provided $US 62 billion in construction-related loan guarantees in 1988. Further information on federal construction spending is provided in Appendix F.

[2]However, a recent consideration in this regard is the thawing of historic east-west military tensions, and the reducing of the Pentagon budget by some 20 percent over three years. American construction organizations are suggesting that these funds be directed toward improving the American infrastructure.

Table 3-5: 1987 Estimate of the Total Infrastructure Needs of the United States

	Total	Timeframe	Annual
	$US billion	Years	$US billion
Potable Water	142	20	7.1
Wastewater	553	20	27.6
Drainage	120	20	6.0
Housing	312	15	20.8
Hospitals	147	10	14.7
Educational Facilities	55	11	5.0
Prisons	8	7	1.1
Post Offices	7	5	1.4
Locks	17	22	0.8
Ports	5	10	0.5
Waterways	34	20	1.7
Dams and Reservoirs	94	10	9.4
Railroads	36	10	3.6
Mass Transit	31	5	6.3
Highways	1639	25	65.5
Airports	34	6	5.7
Bridges	53	20	2.7
Totals	**3288**	**22**	**180**

Source: Associated General Contractors of America

airline passenger travel has doubled and motor vehicle travel has increased 27 percent during the past decade.

A report on America's public works submitted to Congress in 1988 (an excerpt from this report is provided opposite) recommended a doubling of annual U.S. public works investment to improve America's infrastructure. In addition, there has recently been considerable media interest, including cover stories in *Time* and *Barrons*, regarding the state of the nation's public works. The general sentiment of many industry participants is that infrastructure investments will have to be made, essentially forced on Americans by the fact that the cost of inaction exceeds the cost of action[1]. According to Professor James McKeller of MIT, American infrastructure is in much worse shape than Canadian infrastructure. In this sense it may be an opportune time for Canadian infrastructure construction firms to examine particular U.S. regions in more detail.

As projected by Merrill Lynch in their review[2] of the infrastructure scene in the U.S., public construction outlays on infrastructure will show strong growth as the 1990's proceed. Public capital spending per $100 of private capital spending has fallen from $15 in the early 1960's to around $6 in 1988. The physical stock of infrastructure assets has deteriorated markedly in the U.S. in recent years and many components of the U.S. infrastructure appear to be approaching the end of their life-cycles. As indicated in Table 3-5, the Associated General Contractors (AGC) estimate that some $US 180 billion in annual expenditures will be required in coming years to renew and maintain the infrastructure, a doubling of the estimated $US 90 billion spent on infrastructure in 1988. It is likely that, given the self-interest lying behind these estimates, the AGC figures represent the high end of the range of estimates.

Economic development officials, in response to a survey by *Site Selection* magazine, reinforce the view held by the AGC and Merrill Lynch. Road improvement and expansion was cited most often (by 80 percent of the 7,500 responding development agencies) as requiring investment, followed by solid waste disposal, sewage treatment and water treatment systems. Rail transit and public transportation were the infrastructure areas least concerning the respondents, although more than one-quarter felt that these areas needed improvement as well. There is a considerable regional variance to the Site Selection responses, with the New England respondents expressing by far the

[1]for example, the Port Authority of New York and New Jersey estimates that the region has lost 600,000 jobs as a direct result of infrastructure deterioration.
[2]Infrastructure: Update on Work in Progress; Merrill Lynch; October, 1988.

greatest infrastructure concern and officials in the north-central states, where the cities tend to be newer, (Iowa, Kansas, Missouri, Minnesota, Nebraska, Dakotas) expressing the least concern.

While trust funds, specialized taxes and municipal bonds remain the most common methods of infrastructure funding, there is a movement toward the privatization of infrastructure developments. For example, one-third of city and county governments[1] intend to privatize parts of the road-tunnel network, sewers and waste-water treatment plants, while one-quarter intend to privatize portions of the water main and potable water treatment system. For this reason, the study estimates that local government contracting with the private sector, totaling $US 100 billion in 1987, could amount to $US 3,000 billion by the year 2000.

As indicated in Table 2-4 (opposite Page 8), the real level of public works construction increased slightly in 1988, led by strong spending for highways, water supply facilities and schools. Real public sector expenditures overall are expected to continue to grow marginally as modest increases in state and local spending offset small declines in federal construction expenditures. The seven-year economic recovery from 1982-89 has improved the ability of states and municipalities to finance construction. Similarly, the residential and commercial construction activity of the past five years has stimulated, and will continue to require the construction of related infrastructure. The view of the *Industrial and ENR Outlooks* is that expenditures on schools, water supply, maintenance and repair, hospitals, and highways will rank among the strongest public segments during the next couple of years, while spending on military construction and public power plants will be weak for at least five years.

The Water Resources Act of 1986, the Clean Water Act of 1987, and the Surface Transportation Assistance Act of 1987 will have significant long-term effects upon public works construction. The first of these Acts provided cost-sharing arrangements for over 180 water resources construction projects, and as as result, construction of dams, canals, harbours, irrigation systems, and related activity will remain high for the better part of a decade. The Clean Water Act provides up to $US 3 billion annually for sewage system construction through to 1994. The Surface Transportation Act, as discussed in the following section, extends an existing $US 14 billion annual highway construction program[2] through to 1993. The following sections discuss individual public construction areas in more detail.

---

[1]based on the findings of a comprehensive 1987 study by Touche Ross.
[2]This is the largest public works program in the United States.

3.3.1 Roads, Highways and Bridges

Outlook - Slight Increase over Next Five Years

The aging of the vast American highway network will require strong levels of maintenance and repair for the foreseeable future. The recent rapid increases in highway-passenger-miles and the fact that states are specifying tighter smoothness tolerances will also lead to growing expenditures.

While the 1987 extension of the Surface Transportation Act ensures a reasonably stable level of highway construction, it does not provide for funding increases over the original 1982 version. However, it is possible that the federal government will increase expenditures from its Highway Trust Fund in order to prevent a decline in the highway infrastructure[1]. Federal, state and local governments have stated that highway and bridge infrastructure expenditures are of high priority. Some high profile problems such as the recent collapse of a bridge in Tennessee, which claimed three lives, have heightened the profile of the issue. Similarly, the collapse of Oakland's Highway 880 during the October 1989 earthquake in northern California may lead to increased awareness and expenditures on highway and bridge strengthening and upgrading.

The federal Secretary of Transportation has stated that cooperative efforts between private and public sectors will be an increasingly common method of financing infrastructure rehabilitation. In an environment of reduced federal funding, the states which employ bond-fundings, gas tax hikes (a growing trend), toll-road increases and other fundraising strategies will be successful, while states and local governments unable to respond to the privatization thrust will be increasingly hurt by reduced federal allocations. The federal government has also presented plans to introduce a gasoline tax to reduce the deficit rather than fund highway construction, although such a move is being strongly opposed by the infrastructure community.

Combined state and federal highway maintenance and repair expenditures totalled $US 25 billion in 1988, up 13 percent from 1987. Overall, these areas are expected to expand during the next decade as the road network expands and ages.[2] While some of this expenditure includes routine maintenance and grass cutting, the bulk involves road and bridge repaving and painting. Highway passenger miles have increased substantially in recent years and annual highway expenditure

[1]The Highway Trust Fund amounts to some twenty billion dollars destined eventually for highway spending. Various infrastructure experts suggested that this sum, resting in the general federal account, is being dispensed very slowly by the federal government in order to improve the appearance of the overall budget deficit situation. There is a movement to have dedicated trust funds such as this taken "off-budget" in order to remove the incentive for governments to use them for appearance's sake.

[2]The Rebuild America Coalition estimates that one million miles of American highways will have to be resurfaced by the year 2000.

requirements in the $US 65 billion range will be required in order, both, to maintain the existing $US 500 billion asset stock, and to construct new highways.

The June, 1989 issue of *Constructor* Magazine identified ten of the most highly congested highways in the United States, suggesting areas where future construction expenditures may be required. They are, in order: Interstate 75, Northwest of Atlanta; Southeast Expressway, Boston; Dan Ryan Expressway, Chicago; Interstate 94 "Malfunction Junction", Detroit; Route 59 and Interstate 610, Southwest of Houston; San Diego Freeway, South of Los Angeles; Cross Bronx Expressway, New York City; San Francisco-Oakland Bay Bridge; Interstate 405, Southwest of Seattle; and the Woodrow Wilson Memorial Bridge, South of Washington, DC.

Highway expenditures, according to the AGC *1989 Annual Survey*, will be strongest in the West Region (California), while the New England, Northeast and Great Lake states also envision strong markets. A document[1] entitled *Linking America*, produced by the National Association of Counties provides a detailed overview of highway, road and bridge spending on a state-by-state basis and would be a useful source for Canadian firms interested in this segment.

Many state highway departments have been increasingly specifying tighter smoothness tolerances, and have been building penalties and incentives into their contracts. This may lead to increased demand for new pavers capable of meeting these incentive clauses. Canadian entrants in this field should be aware of this trend.

Approximately $US 6.5 billion, or one-quarter of total highway construction expenditures, was directed toward bridges and tunnels in 1988. Expenditures in these two areas, while curtailed in recent budgets, are nonetheless expected to be stronger in the long-term than expenditure on highway flatwork, as some 23 percent (over 240,000) of the nation's highway bridges are described as structurally deficient, and 21 percent as functionally obsolete by the Federal Highway Administration. Rehabilitation of these bridges would cost an estimated $US 51 billion. It is estimated that the bridges of New York City alone will require $US 5 billion in investment by the year 2000.

[1]The document is available from the Association at 440 First St. N.W.; Washington, D.C.; 20001; telephone (202) 393-6226.

3.3.2 Mass Transit

Outlook - Slight Increase over Next Five Years

Mass transit systems continue to be a dominant area of future transportation planning. Some fifty American cities are currently studying or planning transit systems, a fact which may be of interest to qualified Canadian contractors. A combination of funding sources, including private sector funding, special taxes, special assessments, and other measures are being considered for the financing of these projects.

Although ventures such as car pool lanes have not worked well in Los Angeles, and although the layout of the city (being a sprawling mass of housing and sub-cities) does not lend itself to rapid transit, residents of the region consistently rank transportation problems among their top concerns. Los Angeles, as a result, has ambitious mass transit plans, including:

- an initial 4.4 mile ($US 1.3 billion) strip of heavy rail through the downtown area, with five stations;
- a 12 mile ($US 3 billion) extension of this line up to North Hollywood, with twelve stations;
- a 22 mile ($US 900 million) light rail line from Long Beach to downtown;
- an eventual 150 miles of mass transit[1] with a 20-40 year horizon, broken down into one-third heavy rail, one-third light rail, and one-third dedicated bus routes.

The financing pattern for these projects is typical for the nation's mass transit projects in general. Whereas federal funding covered 90 percent of mass transit projects through to the late 1960's, this share has now decreased to about fifty percent. The remainder is drawn through a number of state, county, city, sales tax, and other sources. Contracts for these projects are awarded to the lowest bidder[2].

---

[1]the Pacific Electric Railroad had a 1100 mile rail network covering the Los Angeles region until the early 1960's, when the popularity of the automobile made it uneconomic. Some of these right-of-ways still exist and may fit into future transit plans.

[2]In the case of Los Angeles, the Southern California Rapid Transit District and the Los Angeles County Transit Commission are battling over who has ultimate authority over transit plans, contract awarding and related matters, with the latter expected to ultimately emerge victorious. Contracts for the ongoing work have been awarded to Shank Ohbayashi (a joint venture of a Denver tunneler and a Japanese silent financier) worth $US 45 million, Atkinson worth $US 39 million, Tutor Saliba Perini worth $US 108 million, Tutor Saliba Groves worth $US 62 million, Bechtel worth $US 36 million, among others. (It is interesting to note that our L.A. sources described the Lovat tunnelling machine, produced by Lovat Tunnel Inc of Toronto, although not being used in this instance, as the best soft-ground tunnelling machine in the world, a view which may benefit Canadian firms close to Lovat.)

Seattle also has ambitious transit plans, with the region envisioning: a 15-20 mile rail system worth $US 1 billion; a 1.3 mile bus tunnel (for which a British Columbia contractor won some work); the possible conversion of a recently completed "floating" interstate bridge to accommodate rail; and a proposed gas tax increase of 3-9 cents per gallon which has yet to pass the legislature.

The Bay Area Rapid Transit authority in the San Francisco-Oakland region also has bold plans, including a three-stage, $US 5.5 billion project encompassing a total of 43 stations, 140 miles of track, and five new maintenance yards. The funding for BART comes from a 1.5 cent per gallon county sales tax, bridge tolls, and several dozen other sources.

In Florida, federal legislation has empowered the state commission to issue tax-exempt bonds to finance high-speed inter-city rail services. The franchise for a 300 mile system is to be awarded in 1991, and Canadian firms experienced in such areas may wish to further investigate this opportunity.

Similarly Portland has recently opened a fifteen mile light rail line and is currently planning a 10-15 mile extension to its western regions. Vancouver, a Washington bedroom community of Portland, and Spokane are other western communities considering rail transit projects.

Denver possesses some of the dirtiest air and choked traffic in the nation and has had a one hundred mile transit system in the planning stage since a 1973 dedicated gas tax increase. In-fighting, the huge size of the area, rural versus non-rural disputes and a strong pro-highway lobby have hampered progress to date although there are signs that progress is imminent.

Honolulu has a 15-18 mile rail system worth $US 1 billion under consideration, while Salt Lake City is considering a sixteen mile, $US 224 million, rail system along an existing right-of-way.

As mentioned previously, there are some fifty American mass transit projects at various stages of planning and implementation, many of which may be of interest to Canadian firms.

3.3.3 Airports and Airways

Outlook - Slight Increase over the Next Five Years

There are a number of factors contributing to what is expected to be long-term increases in spending in this segment. There are more airports in the United States (16,300) than in the rest of the world combined, and the volume of air travel has increased steadily since 1974. Forecasts

suggest that the volume of air travel will grow at around five percent annually to the year 2000. Airport delays, congestion, and the need for new control systems will necessitate capital expenditures, as estimated in Table 3-5, totalling as much as $US 6 billion annually (the Federal Aviation Administration has a budget of around $US 1.4 billion for 1989 for airport maintenance, resurfacing and expansion) if the system is to remain safe and efficient.

Given the vested interests of the source of this estimate, the figures of Table 3-5 are likely on the high side. Improvements in air handling efficiency could be accomplished through technological innovations such as a device known as "quick scan" radar. Already installed in Raleigh, North Carolina, this radar is capable of revising aircraft screen positions ten times quicker than previous radar technology. Through increasing the use of existing parallel runways, installation of such radar would allow for 30 percent capacity expansions without having to invest in new runway construction.

3.3.4 Health Care

Outlook - Increase over Next Five Years

Health care construction is very active in the United States, expanding at 14 percent in 1988, with growth figures of at least five percent projected well into the next decade. Health expenditures will be largest in those states with an expanding elderly community[1]. There is a continuing trend to locate specialized health care facilities close to the market rather than within centralized hospitals. Emergency care facilities, out-patient clinics, dialysis clinics, nursing homes and other facilities are widespread, and expenditures in these areas are expected to climb as the population continues to age. Retirement communities, congregate housing and life-care communities will also be required in increasing numbers in the United States. The conversion of existing buildings to outpatient facilities will be common as well.

Construction industry insiders suggest that profit margins may be squeezed in the health care area (as in some manufacturing facilities) as large firms such as Marriott and 5-6 others active in health care developments, have intimate awareness of construction costs, margins and techniques. This work is typically private-sector funded, and contracted to firms specialized in building health care facilities.

[1] such as New York, Ohio, Illinois, Pennsylvania, Florida, Texas, California, and Arizona.

The Veterans Administration will spend around $US 500 million for general and extended care facilities in 1989, as part of a four percent increase in federal health care funding. State and municipal health care expenditures will increase by around six percent in 1989.

3.3.5 Environmental Construction

Outlook - Increase over Next Five Years

Environmental construction is somewhat of a catch-all category. Like the environmental service industries, many environmental sub-segments are currently evolving and only now being statistically defined. The environmental areas in general represent potentially enormous expenditures and revenues for well-positioned firms.

It is projected that the Environmental Protection Agency could produce 280 regulations in 1989 dealing with toxic waste, drinking water, and a wide range of other environmental areas. The Environmental Protection Agency's *Superfund* will spend $US 2 billion on 175 toxic waste projects in 1989, a mere fraction of the total levels which are expected over the next decade. While the *Superfund* has set aside a total of $US 10.5 billion for toxic cleanup, experts suggest that the final cleanup bill will exceed this by a considerable amount. This opportunity may be of interest to those Canadian firms experienced in the environmental construction area, although insurance and litigation matters must be considered.

In addition, an estimated forty percent of American communities face growth constraints because of sewage facilities and systems which are strained to capacity. It is hoped that recent changes to the Clean Water Act will stimulate expenditures in this area. In other environmental areas, a number of communities are repairing, cleaning, designing and developing their waterfronts, and opportunities are felt to exist for qualified Canadian contractors in this area. Certain Canadian engineering firms, for example, are winning sizeable waterfront design contracts.

The asbestos removal scene has been quite active in many regions, with the result being that many subcontractors have entered the fray. Environmental areas such as hazardous waste management are subject to high risks and problems with liabilities and lawsuits. These are not highly recommended environmental opportunities for Canadian firms. Indeed, the risks and insurance costs are such that many reputable American firms are staying away from the areas.[1] Canadian

[1]Given the number of reputable U.S. firms staying away, there is some discussion regarding having the federal government indemnify contractors against third party claims resulting from the clean-up of *Superfund* hazardous waste sites, unless gross negligence is involved.

firms may also likely find its difficult to get bonding and insurance. California is arguably the area of highest environmental activity in the nation. The recent strengthening of California's South Coast Air Quality Management Agency, with some 250 bureaucrats in the enforcement group, will lead to considerable alterations and expense in building design and operation. Such agencies will likely play increasing roles in the future.

3.3.6 Waste Disposal Systems

Outlook - Increase over Next Five Years

Sewer expenditures declined in 1988 in line with the decreased levels of housing and commercial construction activity and the decline in federal funding for treatment plant construction. Around $US 9 billion worth of sewer construction was invested in the United States in 1988 - an increase of forty percent over 1982 levels, although a decrease from the record expenditure in 1987. Federal funds for wastewater construction have declined in recent years and currently amount to $US 1.2 billion (1989 EPA budget) annually.

Given that an estimated forty percent of all communities in the country face growth constraints because of sewage facilities operating at near capacity, given that the federal government is encouraging an upgrading to secondary treatment status, and given that 29 million Americans are not served by sewage treatment facilities at all, it is likely that annual expenditures in this area will show steady increases in the longer term[1]. Collector and interceptor sewers are two areas in particular need, according to the Environmental Protection Agency.

In the area of funding, sewer (and water) expenditures in the U.S. are publicly funded, with the exception of Texas where some privately incorporated water districts have been given public franchises. A typical U.S. project would be as envisioned in Seattle, where $US 500 million will be spent to upgrade facilities to secondary treatment status and where funding will come from local funds, short-term borrowing, and to a lesser extent state and federal sources. The federal government`s Clean Water Act has been recently restructured, replacing direct community grants with low-interest revolving loans. The extent to which state and local governments support, and indeed augment, the new loan program will directly affect the state of the sewage system construction segment during the 1990's.

[1]Denver is one example of a city in need of substantial sewer expenditures. It is currently upgrading its system at a cost of $US 53 million.

As in Canada, sewage treatment plants are mechanically intensive - the mechanical subtrade in the U.S. is described as "a tough tight-margin business", with the result being that there are increasingly fewer good mechanical contractors. Qualified Canadian mechanical firms may find a profitable niche in the United States, given what appears to currently be a shortage of good American companies.

3.3.7 Water Supply Systems

Outlook - Increase over Next Five Years

The buoyancy of the municipal bond market, the improved financial condition of local governments, and the fairly high level of single-family housing construction have contributed to strong levels of construction in this segment in recent years, levels which are expected to remain fairly strong for the next five years. Replacement of aqueduct systems in older cities will also be a steady source of activity for many years. The Water Resources Act has expanded the role of the federal government in municipal water supply and may eventually serve to increase the amount of federal funding for water supply construction. The new federal Safe Drinking Water Act provides for new quality standards and will also result in upgrading and reworking of existing facilities, particularly in smaller communities.

The U.S. has under-invested in water transport and potable water treatment facilities during the past decade, particularly in some northeastern and midwestern systems where it is estimated that as much as fifty percent of transmitted water is lost through leakage. Estimates from the Associated General Contractors of the annual requirement for capital spending on water supply facilities suggest at least $US 6-8 billion will be spent annually for the next two decades (compared to $US 4 billion in 1988). Two-thirds of this sum will be spent on distribution systems, and one-third on treatment facilities.

Together, three federal agencies - the Engineering Corps, the Bureau of Reclamation and the Tennessee Valley Authority - spend about $US 4 billion annually on water resource development and protection. While the TVA is reducing its power system construction program, the other federal water resources programs will increase during the next couple of years.

Among notable activities being undertaken in the water supply segment are:

- a total of 181 new water resource construction projects authorized by the Water Resources Act will keep construction in this segment high for the next decade;

- the Corps of Engineers has received authorization to start sixteen water projects valued at around $US 1.6 billion, highlighted by a $US 800 million lock and dam in Kentucky;
- the Bureau of Reclamation is undertaking a half-billion dollar irrigation project in Colorado and New Mexico;
- Colorado is also home to a $US 500 million water supply and dam project to supply Denver, as well as a $US 110 million reservoir and water delivery project;
- Rhode Island and the Engineering Corps hope to combine on a $US 260 million project to supply water to Providence;
- San Antonio has approved a $US 190 million dam to augment the security of its water supply;
- Suffolk, Virginia may proceed with a large desalination plant;
- Southern California may invest $US 200 million to line two leaking irrigation canals;
- San Diego may proceed with a large water-desalination plan.

Canadian firms may wish to explore these and other projects in more detail.

3.3.8 Educational and Correctional Buildings

Outlook - Increase over Next Five Years

For various reasons, construction expenditures on schools, libraries and museums increased significantly in 1988 and will increase through to the early-1990's. The offspring of the baby boom generation are currently entering elementary school and expenditures will likely precede this generation through the school system. There is a constant process in most U.S. regions where old schools, or schools in regions of declining population, are phased out or converted, at the same time as new schools are built in growing regions. This ensures an ongoing stream of school construction. There have also been some "mega schools" built recently, which are large ($US 25 million) projects in the midst of growing population areas.

Canadian firms should note that school construction in the U.S. is very competitive as there is minimal technical expertise required and the projects, being publicly-financed, are awarded to the lowest bidder. While, the mega schools may afford higher profitability than standard schools projects, in general this is not a highly recommended area for Canadian firms.

According to the Society for College and University Planning, university spending is expected to be strong during the next five years as deteriorating campuses are rebuilt. Federal austerity plans,

such as the Gramm-Rudman budget balancing legislation, have pushed educational building largely under the responsibility of states and municipalities.

According to the American Correctional Association, some $US 2 billion will be spent in 1989 by public and private groups in order to generate some 43,000 beds in correctional facilities. As ninety percent of the inmate population is housed in state prisons, the onus for prison capital funding is on state governments. California, Texas, Michigan, New York and Florida are felt to offer particular opportunities in prison construction.

3.3.9 Military and NASA Construction

Outlook - Decline over Next Five Years

Construction in the military segment peaked in 1987 after six years of rapid annual increases. Budgetary concerns are expected to impact upon this segment in a strongly negative manner. Furthermore, improvements in east-west relations are expected to result in further defence reductions. Construction expenditures on airfields, radar installations, military roads and other installations are expected to fall behind inflation during the next several years. Despite budgetary decreases, defence and related expenditures will still be substantial (particularly compared to Canadian per capita levels), including around $US 3.3 billion for military family housing, $US 500 million for environmental spending[1] by the Department of Defence, $US 250 million for repair and cleanup of weapons facilities, and $US 1 billion on chemical weapons disposal plants for the army.

Information on planned federal defence expenditures is available in *Construction Programs - DOD Budget 90/91*, including documentation on all defence construction projects on a state-by-state basis. The Canadian Embassy in Washington[2] has access to this document and should be contacted directly for further information.

The NASA construction budget, on the other hand, is increasing substantially after the virtual halt in activity with the 1986 shuttle accident. Construction expenditures to maintain the physical assets of NASA are projected to increase from $US 178 million in 1988 to $US 260 million in 1989 and

---

[1]the Department of Energy's aging nuclear weapons complex, with leaky reactors and long-neglected waste dumps, has become a priority for the government and is a potential bonanza for construction firms with experience in these areas, and with security clearance. Some estimates place total expenditures as high as $US 81 billion over 21 years.
[2]contact Brian Oak at (202) 785-1400.

$US 342 million in 1990. Hawaii, Florida, California, and Mississippi are prominent states in this regard.

Table 4-1: The States - Population Rankings, Population Growth and Per Capita Income

	Population in 100,000			Percent Growth in Popul.		Per Cap. Income*
	1988	1980	1950	1980-88	1950-88	1988
United States	***2458***	***2265***	***1513***	***9%***	***62%***	**17055**
California	282	237	106	19%	166%	18936
New York	179	176	148	2%	21%	20279
Texas	168	142	77	18%	118%	18095
Florida	124	97	28	28%	343%	14355
Pennsylvania	120	119	105	1%	14%	15333
Illinois	115	114	87	1%	32%	18261
Ohio	109	108	79	1%	38%	16147
Michigan	93	93	64	0%	45%	16452
New Jersey	77	74	48	4%	60%	20130
North Carolina	65	59	41	10%	59%	15538
Georgia	64	55	34	16%	88%	16094
Virginia	60	53	33	13%	82%	17333
Massachusetts	59	57	47	4%	26%	19661
Indiana	56	55	39	2%	44%	15179
Missouri	51	49	40	4%	28%	16471
Wisconsin	49	47	34	4%	44%	15714
Tennessee	49	46	33	7%	48%	14694
Maryland	46	42	23	10%	100%	16739
Washington	46	41	24	12%	92%	16957
Louisiana	44	42	27	5%	63%	16818
Minnesota	43	41	30	5%	43%	17674
Alabama	41	39	31	5%	32%	13415
Kentucky	37	37	29	0%	28%	14324
South Carolina	35	31	21	13%	67%	12857

Note: table continued on following page

SECTION FOUR: ACTIVITY AND OUTLOOK BY REGION

4.1 INTRODUCTION

In a market as large as that of the United States, an appreciation of regional differences in growth, unionization levels, wages, costs, taxes, and local competitors is essential for firms that are serious in their intent to enter the construction market. This Section provides basic information on the market size, characteristics and trends of the various regions of the United States.

Regional Growth

As discussed in the introduction to this report, the American market encompasses nine regions, each of which approaches the population of Canada as a whole. As indicated in Table 2-2 (opposite page 6), the South and West Regions have enjoyed the highest population growth levels during the 1980's. The two divisions of the Northeast Region have the highest Per Capita Gross State Product levels, while the divisions of the South Region generally have the lowest levels of per capita economic output.

At the individual state level, as described in Table 4-1, California, New York, Texas, Florida and Pennsylvania are the five most populous states, while Nevada, Arizona, Florida, Alaska and New Hampshire have shown the greatest percent population increases during the 1980's. The District of Columbia, Alaska, Wyoming, Connecticut, New York, New Jersey, Massachusetts and California have the highest levels of per capita gross state product. Table 4-2 presents the regional breakdown of construction spending. The figures typically follow population patterns although certain individual segments, such as Religious Buildings in the South, vary from what one would expect based solely on population.

Boom Regions

Information provided by Cognetics Inc to the *Wall Street Journal* predicts that the fastest growing "Boom Towns of the 1990's" will include the following: the Marietta and Roswell region of Georgia; the Dallas and Richardson region of Texas; the Troy and Warren area of Michigan; the Scottsdale and Sun City region of Arizona; the Newport Beach and Laguna region of California; the Herndon and Manassas region of Virginia; the Santa Ana and Costa Mesa area of California; the Virginia Beach and Chesapeake area of Virginia; the East Brunswick area of New Jersey; and the Orlando and Kissimmee region of Florida.

Typically located on the fringes of larger metropolitan areas, these are formerly sleepy towns suddenly transformed by the infusion of new office parks, numerous small companies, and

Table 4-1: The States - Population Rankings, Population Growth and Per Capita Income

	Population in 100,000			Percent Growth in Popul.		Per Cap. Income*
	1988	1980	1950	1980-88	1950-88	1988
United States	**2458**	**2265**	**1513**	**9%**	**62%**	**17055**
Arizona	35	27	7	30%	400%	15143
Oklahoma	33	30	22	10%	50%	15152
Colorado	33	29	13	14%	154%	17879
Connecticut	32	31	20	3%	60%	22188
Iowa	28	29	26	-3%	8%	15714
Oregon	27	26	15	4%	80%	15185
Mississippi	26	25	22	4%	18%	12308
Kansas	25	24	19	4%	32%	16800
Arkansas	24	23	19	4%	26%	13333
West Virginia	19	20	20	-5%	-5%	12632
Utah	17	15	7	13%	143%	14118
Nebraska	16	16	13	0%	23%	16875
New Mexico	15	13	7	15%	114%	16000
Maine	12	11	9	9%	33%	14167
New Hampshire	11	9	5	22%	120%	17273
Nevada	11	8	2	38%	450%	17273
Hawaii	11	10	5	10%	120%	17273
Rhode Island	10	9	8	11%	25%	15000
Idaho	10	9	6	11%	67%	13000
Montana	8	8	6	0%	33%	15000
North Dakota	7	7	6	0%	17%	15714
South Dakota	7	7	7	0%	0%	14286
Delaware	7	6	3	17%	133%	17143
Vermont	6	5	4	20%	50%	15000
Washington, D.C.	6	6	8	0%	-25%	48333
Wyoming	5	5	3	0%	67%	24000
Alaska	5	4	1	25%	400%	40000

Source: U.S. Department of Commerce, Bureau of the Census; July, 1988.
***Income defined as gross state product**

thousands of new employees. The trend toward expansion of these "exurban job centres" is expected to continue through the 1990's as improved telecommunication systems, congestion, and a myriad of other factors combine to minimize the importance of location, and to make remote spots increasingly convenient for entrepreneurs.

Time Magazine, in a February 1989 issue, discussed the trend toward "second tier" cities, wherein an increasing number of refugees as well as Americans are choosing to settle in cities of a size large enough to be economically and culturally alive yet manageable enough to avoid urban blight. The population typically ranges from 150,000 to around a half-million residents. The cities combine good jobs, affordable housing, relatively low crime and a lack of pretension - indeed many of these cities were formerly considered ugly ducklings. These cities are often overshadowed by larger cities in the state, even though some, such as Columbus, have generated 100,000 new jobs during the 1980's. In the article Time described the ten hottest "second tier" cities as being: St. Paul, Minnesota; Birmingham, Alabama; Portland, Oregon; Fort Worth, Texas; Orlando, Florida; Sacramento, California; Providence, Rhode Island; Charlotte, North Carolina; Columbus, Ohio; and Albuquerque, New Mexico.

A study published in the annual report of the San Francisco Bay Conservation and Development Commission projects the fastest growing job markets during the 1988-1992 period to be in order; Sacramento, San Diego, Tampa, Riverside, Phoenix, Fort Lauderdale, San Jose, Anaheim, D.C., Oakland, Atlanta, Norfolk, Miami, Seattle, Nassau County, San Antonio and Boston.

The following pages examine the construction market trends and characteristics for, in order, the West, South, Midwest and Northeast Regions. During the course of the study, we have encountered various random items on particular American cities. As some of these may be of interest to Canadian firms, we have included them in this Section, under the heading of *city notes*.

4.2 WEST REGION

Mountain Division *Colorado, Idaho, Montana, Utah, Wyoming, Arizona, N.Mexico, Nevada*
Pacific Division *California, Oregon, Washington, Alaska, Hawaii*

The western states are attractive areas for contractors for a number of reasons. As indicated in Tables 1-2 and 4-1, they have seen the most rapid population increases of any American area during the 1980's, with four states - Nevada, Arizona, California and Alaska - ranking among the ten fastest growing states in the country. Population increases through the year 2010 are projected to range up to forty percent. Residents of Texas, Hong Kong, Mexico and other areas enter the state at an annual rate of some 300,000 people. States of the Mountain Division also have low unionization levels and consequently offer the third lowest wages of the nine divisions in the United States. In addition to being rapidly growing, the largest state in the Region, California, offers a construction market which approximates the size of the Canadian market - current projections for 1989 indicate $US 43 billion[1] worth of new construction in California.

In *public works* construction, the region is an earthquake sensitive zone and a considerable volume of related construction is anticipated. For example, Salt Lake City recently completed a $30 million retrofitting of its municipal building with base isolators. Seismic isolation such as this is expected to become quite common in bridges with spans of over three hundred feet.

Many western states, particularly California and Arizona, have water-related concerns and have directed significant expenditures toward irrigation, dams, and water movement projects[2]. Pumping of groundwater currently accounts for 60 percent of California's water needs, versus a more common level of 40 percent for other regions. Future droughts in California and surrounding states would lead to increased construction spending on dams, reservoirs and water transport. Canadian firms experienced in water-related construction may wish to pursue jobs in this region - the region's population, wealth, and increasing water needs[3] suggest that activity will be high for decades to come.

---

[1]comprising roughly 60 percent residential buildings (about ten percent of this sixty percent is for alterations and additions), 30 percent nonresidential buildings, and 10 percent heavy construction expenditures.
[2]this is also true of many states in the Southern Region
[3]While the public may be capable of restraining water consumption somewhat, industrial restraints may be more difficult. Technologically-based firms in the Silicon Valley are high water consumers for use on circuit boards and other components.

Table 4.2: Regional Construction Spending in 1987 by Segment

	All Regions *$ ten million* Total in '87	Northeast *$ ten million* Total in '87	Midwest *$ ten million* Total in '87	South *$ ten million* Total in '87	West *$ ten million* Total in '87
Total Private Nonresidential	**9189**	**1986**	**2008**	**3212**	**1984**
Industrial:	1371	293	384	442	253
- manufacturing plants	1181	216	334	405	226
- other industrial buildings	190	77	50	37	27
Office	2643	724	502	876	542
Hotels and Motels	738	126	126	230	257
Other Commercial:	2902	490	682	1069	661
- retail&service value>$1million	1315	223	280	534	278
- retail&service value<$1million	769	123	206	286	155
- commercial warehouses	583	81	142	180	180
- other commercial buildings	234	63	54	69	48
Religious	275	27	63	121	64
Educational	344	105	52	130	56
Hospital and Institutional:	604	170	135	207	92
- hospitals, clinics, infirmaries	433	138	85	150	60
- nursing homes, rest homes, other	170	32	50	57	32
Miscellaneous Private Nonresidential	324	52	64	138	70
Total State and Local Public Constr.	**6096**	**1108**	**1382**	**2233**	**1374**
Buildings:	2036	361	454	721	500
housing and redevelopment	106	32	20	33	21
educational:	883	131	219	334	200
- primary and secondary schools	629	102	132	237	158
- higher educational facilities	199	19	71	71	39
- other educational facilities	56	10	17	26	3
hospital	117	24	22	58	13
other buildings:	929	174	193	296	267
- general administration	195	35	41	77	42
- police, fire, and correctional	263	39	58	56	111
- miscellaneous other buildings	471	100	94	163	114
Nonbuilding:	4060	747	928	1511	873
Highways and Streets:	2233	418	503	871	441
- roads	1821	332	405	701	382
- bridges, overpasses, and tunnels	412	87	97	169	59
Conservation and Development	120	11	11	46	52
Sewer Systems:	884	177	256	295	156
- treatment plants	510	100	159	183	70
- lines	153	31	37	50	35
- other sewer-related	221	46	61	62	51
Water Supply Facilities	360	48	66	158	88
Miscellaneous Nonbuilding Construction	463	93	93	141	136
- amusement and recreational facility	76	11	20	26	19
- power generating facilities	162	32	31	51	48
- other	207	50	42	64	69

Source: U.S. Department of Commerce, Bureau of the Census; July, 1988.

In terms of *office* construction, the region's cities have vacancy rates similar to the national average, although Sacramento and Honolulu have particularly low vacancy rates. Office vacancy rates peaked at 20 percent in 1986, well above the 13 percent level necessary to maintain rental rates. It is expected to take into the early-1990's until office construction reaches substantive activity levels. Canadian firms should be aware that anti-development policies in the Northeast and Pacific states (particularly California) are increasingly prevalent and may inhibit new construction in many segments. San Francisco, for example, has a one-year old growth cap in place, and no new office buildings were approved in 1988. As a result, nearby Sacramento and the Central Valley have become active markets for new office construction. Tightening environmental standards in California are creating construction requirements for various manufacturing industries, creating opportunities for environmental construction firms.

The region's cities generally have *industrial* vacancy rates higher than the national average, with the exception of Portland and Seattle which have very low rates. As indicated in Table 4-3, nursing homes and educational facilities have been active areas, while power facilities and small retail buildings are among the slow growth areas. Southern California and the surrounding states have the largest concentration of manufacturing enterprises in the nation, with food, apparel, aerospace, defence, electronics, chemical, and other high technology manufacturing being amongst the dominant industries.

Mining and processing of copper in Arizona and gold in Nevada and California has been revitalized in the past year and Canadian firms may wish to investigate related construction activity. While California has considerable oil production and refining capacity, it nonetheless imports large amounts of Canadian energy and there is some discussion regarding natural gas pipeline construction from Alberta to California. Relevant Canadian contractors should stay abreast of these developments via the Alberta government, TransCanada Pipelines and other sources.

As discussed in more detail in Section Six, the states in the Mountain Division are generally low union areas - most of the division's states have construction unionization rates estimated in the 10-20 percent range. With the close correlation between unionization levels and wage rates, the weekly wages of construction workers in the mountain states averaged around $US 400 in 1987, the third lowest level amongst the nine divisions.

However, the Pacific states, particularly California, are quite highly unionized in the construction industry and average weekly wages in 1987 were in the $US 500 range. Considering the high unionization levels, labour relations are described as fairly smooth by industry insiders - certainly less fractious than, for example, in New York and other Northeast states.

Western Region City Notes

Albuquerque, New Mexico was identified above as one of the ten hottest areas for development in the nation, and office buildings, hotels, cultural centres, industrial facilities, and retail spaces are being added to the region. The quality of life in the region, combined with the diversified economy which is being developed, cause the Wharton and Chase Econometric Services to project Albuquerque to be among the nation's fastest growing cities through the year 2020.

Seattle, hit by Boeing layoffs and slowdowns in the timber industry during the past few years, has rebounded with strong growth in a wide range of new industries. Both Seattle and nearby Portland have developed strong high technology, logging, shipping (Seattle) and public sectors during recent years. Partly fueled by the bulging order books of Boeing, and quality-of-life inflows from other states, the region is projecting strong population growth for several years to come.

Recent major construction projects in California have included a $US 75 million printing plant in Los Angeles, a $US 50 million biomass plant in Fresno County, a $US 55 million sewage treatment plant in Sacramento County, and a $US 40 million saw mill cogeneration project in Shasta County.

The Tucson and Phoenix regions have been overbuilt in recent years in the residential and commercial segments and will likely see reduced activity until the excess is absorbed. The San Diego region has enjoyed high activity in manufacturing because of its proximity to the "maquiladora" (cheap-labour assembly) operations in the border towns of Mexico. San Diego has also become a centre for university medical research. Los Vegas has become a very active market in recent years, experiencing growth as a retirement community and as a distribution centre.

Table 4-3: Five-Year Construction Trends in the West (1983 to 1987)	
Highest Private Growth Segments	
Private Educational Buildings	+195%
Nursing and Rest Homes	+191%
Commercial Warehouses	+143%
Highest Public Growth Segments	
Police, Fire, Correctional, Other Public Buildings	+226%
Public Higher Educational Buildings	+144%
General Administration Buildings	+133%
Lowest Private Growth Segments	
Retail and Service Buildings Value Below $1 million	-38%
Other Industrial Buildings	-36%
Manufacturing Plants	-13%
Lowest Public Growth Segments	
Other Public Educational Facilities	-80%
Public Power Generating Facilities	-65%
Public Housing and Redevelopment	-42%

note: This table illustrates the fastest and slowest growing construction segments as measured by the difference in construction expenditure in 1983 versus 1987.
Source: U.S. Department of Commerce; Bureau of the Census; July, 1988

Table 4-4: Five-Year Construction Trends in the South (1983 to 1987)	
Highest Private Growth Segments	
Private Educational Buildings	+150%
Retail and Service Buildings Value Above $1 million	+113%
Other Commercial Buildings	+60%
Highest Public Growth Segments	
Sewage Treatment Plants	+161%
Amusement and Recreational Facilities	+160%
Other Educational Facilities	+136%
Lowest Private Growth Segments	
Other Industrial Buildings	-38%
Manufacturing Plants	-30%
Hospitals, Clinics, Infirmaries	-21%
Lowest Public Growth Segments	
Housing and Redevelopment	-44%
Hospitals	-28%
Police, Fire, Correctional, Other Public Buildings	-8%

note: This table illustrates the fastest and slowest growing construction segments as measured by the difference in construction expenditure in 1983 versus 1987.
Source: U.S. Department of Commerce; Bureau of the Census; July, 1988

4.3 SOUTH REGION

S-Atlantic Division	*Delaware, D.C, Maryland, Carolina's, Virginia's, Florida, Georgia*
E-S Central Division	*Alabama, Kentucky, Mississippi, Tennessee*
W-S Central Division	*Arkansas, Oklahoma, Texas, Louisiana*

The South Region, with 13 percent population growth during the 1980's, ranks second in the U.S., just behind the West Region's 17 percent growth level. Construction prospects in the southern states are generally felt to be quite strong, although some areas are attempting to moderate their growth levels.

For example, the state of Florida - which has been increasing in population by about 900 residents per day (three percent annually) for some time - has been a popular area for Canadian construction firms in the past. In response to the state's rapid, and some would say uncontrolled, growth, the Florida Growth Management Act was passed in 1985 and its effect is starting to be felt. The Act required 67 counties to submit five-year development plans and is aimed at restoring some control to the state's construction and development activity by prohibiting construction until adequate infrastructure is in place. While the Act may slow certain types of construction, experts feel that the rapid growth of the state will nonetheless force significant future expenditures on water, wastewater, toxic cleanup, and solid waste projects.

Amongst other states in the South Region, Tennessee has enjoyed strong industrial growth during recent years and is projecting significant expenditures on new highway construction, and on repair of existing highways to service the new industrial belt in the state's midsection. In Texas, economic activity will likely remain weak, given the poor outlook for oil and gas exploration and drilling. National drilling rig counts in 1989 totalled around 900, compared to a peak level of 4000 in the early-1980's. The majority of these rigs are located in Texas, and the degree of the decline provides a good indication of how far the Texas economy has fallen since early in the decade. Recovery may take several years.

Table 4-4 highlights certain non-residential construction areas of high and low activity in the South Region during the five-year period to 1987. As in the West, construction of educational facilities was active during this period, while industrial building was a low growth segment. The South had

received a large share of industrial construction during the past two decades and this has contributed to the slowdown which has occurred since 1983.

Overbuilding in the early 1980's, and the energy slowdown since 1984, has contributed to *office* vacancy rates currently near 25 percent for the region as a whole, and it is expected to require at least five years for vacancy rates to drop sufficiently to stimulate a major resurgence in office construction. Certain cities in the northern parts of this region, including Maryland and North Carolina, have fairly low office vacancy rates and may enjoy strong construction activity. Baltimore has enjoyed a boom in highrise construction during the past five years and the city is revamping its outdated master plan in order to direct future growth. With the exception of these areas, the region's overall office construction prospects are not bright.

Industrial vacancy rates are, with the exception of Houston, Dallas, New Orleans and Miami, generally quite low and represent one of the region's more attractive construction segments. In particular, Baltimore, most Florida cities, Nashville and Washington have rates below five percent and may see future activity.

With the exception of a few states, unionization levels in the southern construction industries are low, with less than ten percent of the construction labour force belonging to unions. As a result, weekly construction wages, at $US 380, are the lowest of all regions. Trade labour is readily available in all southern states and trade labour wage rates are also significantly lower than the other regions.

South Region City Notes

The town of Herndon in Fairfax County, Virginia, twenty-three miles west of Wahington, D.C., has experienced a major boom in office parks, hotels, retail and high-tech facilities since 1984, as sites near Washington became scarce and as firms attempted to cut rental expenses and commuting time. With a resident population of only 15,000 people, the daytime population swells to 40,000. The boom is expected to continue through the 1990's, despite efforts by some townsfolk to maintain the rural flavour of the community.

The two-county corridor twenty miles northwest of Atlanta, encompassing the towns of Marrietta and Roswell and the counties of Cobb and Fulton, is expected to the hottest small-business boom area in the nation. Cognetics forecasts that the area will add 124,000 new jobs between 1988 and

Table 4-5: Five-Year Construction Trends in the Midwest (1983 to 1987)	
Highest Private Growth Segments	
Other Commercial Buildings	+350%
Retail and Service Buildings Value Above $1 million	+254%
Manufacturing Plants	+100%
Highest Public Growth Segments	
Primary and Secondary Schools	+164%
Sewage Treatment Plants	+151%
Higher Educational Facilities	+137%
Lowest Private Growth Segments	
Hospitals, Clinics, Infirmaries	-41%
Other Industrial Buildings	+6%
Religious Buildings	+21%
Lowest Public Growth Segments	
Hospitals	-21%
Housing and Redevelopment	-13%
Bridges, Overpasses and Tunnels	-9%

note: This table illustrates the fastest and slowest growing construction segments as measured by the difference in construction expenditure in 1983 versus 1987.
Source: U.S. Department of Commerce; Bureau of the Census; July, 1988

Table 4-6: Five-Year Construction Trends in the Northeast (1983 to 1987)	
Highest Private Growth Segments	
Other Commercial Buildings	+473%
Retail and Service Buildings Value Above $1 million	+254%
Religious Buildings	+238%
Highest Public Growth Segments	
General Administration Buildings	+169%
Power Generating Facilities	+167%
Sewage Treatment Plants	+138%
Lowest Private Growth Segments	
Nursing and Rest Homes	-3%
Hospitals, Clinics, Infirmaries	+7%
Hotels and Motels	+47%
Lowest Public Growth Segments	
Higher Educational Facilities	-37%
Amusement and Recreational Facilities	-21%
Housing and Redevelopment	0%

note: This table illustrates the fastest and slowest growing construction segments as measured by the difference in construction expenditure in 1983 versus 1987.
Source: U.S. Department of Commerce; Bureau of the Census; July, 1988

1998, an increase of 146 percent. The booming service economy, the influx of Northern companies to the South, the moderate cost of living, and technological advances such as fax and personal computers have led to the growth in the area. The nearby Atlanta region will also continue to see large growth in population and employment - the Atlanta Regional Commission projects a tripling in employment in Atlanta between 1980 and 2010.

While most Texas regions have experienced reduced activity in line with the weakness in oil prices, some construction industry insiders expressed the opinion that the concept of contrarian investing may become more popular. What this suggests is that firms would buy into a market at the bottom in anticipation of an eventual rebound, rather than entering strong markets at high prices and competition. Regions such as Texas may be affected by such a trend.

4.4 MIDWEST REGION

E-N Central Division *Illinois, Indiana, Michigan, Ohio, Wisconsin*
W-N Central Division *Iowa, Kansas, Minnesota, Missouri, Nebraska, N&S Dakota*

Table 4-5 highlights certain non-residential construction areas of high and low activity in the Midwest Region during the five-year period to 1987. Commercial buildings, schools and sewage facilities have seen rapid growth, while hospitals and housing developments have been slow growth segments.

The region contains a mix of industrial and agricultural states. The industrial states (Indiana, Ohio, Michigan and Illinois) are quite highly unionized in construction, while the W-N Central states, with the exception of Missouri, are not highly unionized. The states in this region have shown virtually no population growth during the 1980's. Indeed, the two divisions in this region rank first and second amongst the nation's slowest growing divisions during the 1980's.

The *industrial* states are expected to show some moderate economic growth and increased construction activity through the early 1990's stemming from the revival of manufacturing output and plant investment. Wisconsin is quite typical of states in this Region - plant closings cost the state some 90,000 jobs during the 1980 to 1984 period, while revival in small manufacturing companies have resulted in almost 30,000 jobs being added in the state during the 1984 to 1988 period. The state is an active producer of machinery and also a major producer of dairy products

and forest products. Illinois is a prominent industrial player in the U.S., ranking first among the states in industrial output (appliances, televisions, cosmetics, pharmaceuticals), third in retail consumption, and housing forty of the Fortune Top 500 firms. Missouri is also a significant industrial presence, being dominant in the production of automobiles, beer, defence products, machinery, apparel and processed food.

The region projects fairly strong *office* construction during the early-1990's, particularly if vacancy rates fall to the expected 12 percent level which would allow rental rates to rise.

Midwest Region City Notes

Troy, Michigan which sits eighteen miles north of Detroit has benefitted from the changes which have affected Detroit during the past decade. Many companies have left Detroit and established in Troy. Auto makers in a leaner environment depend more on outside companies and many of these have emerged in Troy. As a result, the city has been amongst the fastest growing regions in the country since 1983, and will be amongst the ten fastest growing employment creators during the rest of the century. The construction is primarily in light manufacturing facilities and offices for engineering and other professional service companies. Dayton, Ohio has also demonstrated strong growth in recent years. The city which was formerly dominated by tires and heavy manufacturing has undergone an entrepreneurial recovery and has expanded its industrial economy with machine and tool makers, printing companies, and electronics and precisions instrumentation manufacturers.

4.5 NORTHEAST REGION

New England Division — *Connecticut, Maine, Mass, New Hampshire, Rhode Island, Vermont*

Mid-Atlantic Division — *New Jersey, New York, Pennsylvania*

The Northeast region enjoyed exceptional growth during most of the 1980's, as evidenced by the growth in spending levels of the state governments. During the six-year period leading up to 1988, for example, state spending in the country as a whole increased by 52 percent, while increases in Northeastern states ranged from 66 percent in Massachusetts to 91 percent in Maine.

However, the regional economy slowed considerably during 1989. This slowdown, combined with the high state spending and state tax reductions during the 1982-1988 period, has constrained

the current fiscal position of many states and state government spending will be reduced during the next few years in response to these constraints.

Private spending in the region is expected to increase in certain segments. For example, most states in the northeast region project increasing levels of *office* construction in the early-1990's, as the region's current office vacancy rate of 13 percent approaches the structural rate of 9-10 percent by 1991. The commercial market, including *hotels* and offices, is quite tight in the Northeast, rental rates are high, and these segments will likely see some activity during the coming years. As indicated in Table 4-6, commercial buildings and many public areas have seen strong growth, while nursing homes and educational facilities have been low growth segments. Several Maritime-Canada companies have been active in supplying stone, old-fashioned brick, and other construction materials to the New England states, and Canadian materials have developed an excellent reputation in the region. This may represent a potential entry point for Maritime contractors.

In addition to being more unionized than other U.S. regions, it is also felt that the Northeast Region has a higher "social" orientation in tendering contracts. For example, 10 percent of future construction jobs in the Boston area must go to females. The minority set-aside requirement is a significant issue in the region, although less so in the states of Maine and Vermont which have few minorities.

The New England states have a highly fragmented government structure. For example, in a region the size of New Brunswick, there are 93 electric utilities. In the Boston metropolitan area alone, there are 92 individually managed towns with their own governments and regulations. Thus, while the Canadian Consulate advises that Canadian construction firms "get serious and get hungry in this region", they also advise adopting local partnerships with local knowledge as being integral to successful penetration.

Northeast Region City Notes

The most active area in the Northeast encompasses the Nashua and Manchester vicinity in New Hampshire, the Portland area in Maine, and Salem and Boston in Massachusetts. The legacy of Tip O'Neill is being felt in Boston with a series of massive infrastructure projects due to start in 1989/1990. The building of a third harbour tunnel, the depressing of the central road artery, and the cleaning of Boston harbour will total an estimated $US 13 billion. The spinoffs from these

projects will be substantial and extend beyond the city of Boston. The Boston area is also the "health care capital" of the United States, featuring nine medical schools, 45 teaching hospitals, and an estimated one-half of the nation's medical research expenditures - it will benefit from increased long-term health care spending. In addition to these projects, Canadian developer, Robert Campeau, is projecting $US 500 million worth of shopping centre related construction in the downtown core of Boston[1]. As discussed in the *Penetrating the United States* section, Canadian firms aligned with Canadian developers and architects would likely have an advantage in entering the market.

The Boston region is highly unionized. Indeed the entire Northeast region, as discussed in the next section, has the highest unionization rate amongst the nation's construction workers and (at $US 520 weekly in 1987) also has the highest construction wage rates in the country. In the 1988 election, a referendum question in Boston decided that all government construction jobs must go to firms paying "prevailing wages", which essentially means union-level wages. Typically, projects in the southern regions of Boston go to Irish-dominated firms, while work in the Roxbury area is dominated by firms managed by, and employing, blacks. As one source suggested, contractors bidding in South Boston are "okay if named O'Malley, but out of luck if named Malley O". Local nuances such as these are common in most American cities, suggesting that firms best visit and learn about the region before investing money in it.

The Boston Redevelopment Authority controls the building permit aspects of construction in the city. The Authority has tight control over this process and are active in requiring projects to be further set back from the street, to develop low income property as part of the approval condition, and in placing other requirements upon developers. In making such demands, the BRA largely reflects the region's desires - the region is highly politicized, environmental lobbies are strong, environmental standards are high, energy is short and energy efficiency thus a prominent issue,

[1]The impact of recent organizational changes upon this development, if any, is not yet known.

SECTION FIVE: LABOUR AND UNIONIZATION ISSUES

5.1 BACKGROUND

Total construction industry employment reached a record 5.1 million employees in 1988 and probably would have been greater had there not been labour shortages in some of the strongest construction markets. While industry employment has reached record levels, it is anticipated that labour issues will increase in importance as availability becomes more of a concern. According to the Construction Labour Research Council, the U.S. construction market must attract 210,000 new construction workers per year through the next decade, and it will become increasingly difficult to meet this level given the declining number of people in the 18-24 year age bracket. Furthermore, craftspeople are aging and difficult to replace - as expressed by the President of a major contractor, "skilled craftsmen are almost all in their fifties and the younger workers don't take pride in their work".

While labour shortage is a concern in its own right, it is also proven that times of full employment lead to increased grievances[1] and labour friction. The shortage of manpower reduces the quality of labourer, and, furthermore, a vibrant economy provides more alternative jobsites for labourers and allows them to act more aggressively with existing employers.

The Council estimates that the growth in the replacement needs of the industry exceed growth in labour supply by almost three-fold. As the supply of new workers decreases, wages will increase, as will expenditures on education and training. In response to the increasing concern regarding future labour availability, representatives of thirty leading construction associations have formed an organization known as Workforce 2000. The main orientation of the Workforce is to address recruitment, image and training issues in an organized manner.

5.2 UNIONIZATION TRENDS

Unionization in most American industries has diminished significantly during the past three decades. In 1955, approximately a third of the U.S. labour force belonged to a union; the figure has dropped to around seventeen percent in 1987, or approximately one-half of former levels. Canadian unionization rates are higher than those in the U.S. - a fairly steady thirty percent of the Canadian civilian labour force belonged to unions in 1987.

---

[1]Labour grievances in the United States are resolved through four steps: the union meeting with the contractors; the Association intervening to assist if possible; a joint arbitration board conducting a hearing; and, if still not resolved, the National Labour Relations Board being called in to resolve the grievance.

The unionization decline in the United States has primarily resulted from the structural shift in the economy from manufacturing to the service industries, where workers have traditionally been difficult to organize into union groups. International competition has also contributed to the waning of unions, as highly unionized industries such as steel and automobile manufacturing have suffered the brunt of competition from Asian countries. In addition, the advent of unfair dismissal laws and unemployment benefits have reduced the perceived benefits of, and need for, union membership.

In line with the overall American trend, unionization in the U.S. construction sector has declined from almost one-half of construction workers in 1966 to around one-quarter in 1988. The sharp declines have occurred in all regions, save the Midwest, where construction unionization has declined only slightly. Estimates of the Associated Builders and Contractors suggest that open shop arrangements have climbed from twenty percent market share in 1969 to around seventy percent of all nonresidential construction[1] in 1989. Information from the U.S. Bureau of Labour indicates that 21 percent of construction employees were union members in 1987. It is felt that the unionization decline has pretty well "run its course" as of 1989, and that hardcore union regions such as New York City, Boston, Philadelphia and San Francisco are unlikely to decline further. The unionization decline has been most noticeable in the highly-competitive commercial building segment.

There are a number of factors which explain the decline in construction industry unionization. Right-to-work laws, implemented by several states, allow those covered by collective bargaining agreements to choose not to be members of a union. As a result, estimates for the rate of collective bargaining coverage are higher than those for the rate of union coverage. It is also estimated that one-half of construction union members actually work in the nonunion sector, with Northeast and Midwest Region union members being most likely to work in non-union projects.

The increased productivity, and reduced costs of non-union contractors have also caused the dramatic decline in union market share. According to certain U.S. contractors, non-union firms are capable of shorter work schedules and face lower risks of stoppage. Non-union firms often have a tacit agreement with workers that they will be kept on after project completion and re-deployed elsewhere. Union firms generally hire temporary workers on a project-by-project basis from the union hall.

[1]Residential construction is typically 95 percent non-union.

Table 5-1: Construction Unionization, Employment, and Wages in 1987 by Region

	Cons Empl thousands	Approx Union of cons empl	Weekly Wages of Construction Employees by Type of Construction					
			All Constr	Res.Bldg	Nonres.Bldg	Road Cons	Infrastr.	Other Heavy
United States	**4905**	**24%**	**445**	**398**	**497**	**503**	**478**	**530**
Northeast Region	**1028**	**>40%**	**~520**	**~440**	**~600**	**~610**	**~600**	**~700**
New England Division	*318*	*>40%*	*~510*	*~480*	*~590*	*~620*	*~580*	*~680*
Connecticut	77	>40%	560	558	645	720	588	681
Maine	32	>40%	387	306	504	445	451	522
Massachusetts	135	>40%	514	477	598	622	603	740
New Hampshire	37	>40%	426	401	500	551	489	518
Rhode Island	20	>40%	438	371	556	582	585	555
Vermont	17	>40%	358	322	386	482	453	498
Mid-Atlantic Division	*710*	*>40%*	*~520*	*~420*	*~600*	*~600*	*~610*	*~710*
New Jersey	164	>40%	555	514	640	612	668	758
New York	328	>40%	535	420	620	618	617	703
Pennsylvania	218	>40%	462	358	514	530	517	692
Midwest Region	**970**	**~30%**	**~470**	**~420**	**~550**	**~610**	**~570**	**~550**
E-N Central Division	*664*	*>40%*	*~480*	*~440*	*~550*	*~640*	*~600*	*~580*
Illinois	196	>40%	555	503	602	682	671	596
Indiana	98	>40%	434	317	492	552	472	494
Michigan	122	>40%	500	412	556	629	581	560
Ohio	176	>40%	444	351	495	590	505	555
Wisconsin	72	>40%	449	327	519	616	567	497
W-N Central Division	*306*	*15%-20%*	*~450*	*~370*	*~550*	*~540*	*~480*	*~490*
Iowa	36	10%-20%	382	295	428	454	417	373
Kansas	45	10%-20%	410	338	427	468	434	467
Minnesota	80	10%-20%	508	404	575	605	534	541
Missouri	99	>40%	460	365	543	528	469	461
Nebraska	25	10%-20%	370	311	451	429	436	433
North Dakota	11	10%-20%	378	na	366	492	427	526
South Dakota	10	10%-20%	330	280	333	413	391	336

Note: Table continued on following page.

Government wage legislation, such as the Davis-Bacon Act (Section Seven) for federal projects, have tended to result in union contractors capturing higher shares of public projects than of private projects[1]. As a result, the slower growth in public expenditures since the early-1970's has also been a factor behind the decreasing market share of union contractors.

To counter the declining unionization trend and to diversify risks, many (formerly union) firms have adopted a "double breasting strategy" wherein they own both union and non-union contractors in the same region. For example, J.A. Jones of North Carolina (owned by Holtzmann in Germany) controls both Tompkins (union) and Tiber (non-union) in the Maryland-D.C. region. There is currently anti double-breasting legislation pending in Congress which would outlaw such practices. However, such legislation has been introduced in several previous sessions and opinions are mixed regarding its chances of becoming law.

Construction union wages and benefits grew rapidly during the 1970's, and wage gaps as high as 60 percent provided contractors with an increasing incentive to replace union labour with non-union labour[2]. The gap in productivity which had traditionally favoured union labour over non-union labour in the construction sector is felt to have disappeared during the decade following 1972, as non-union labour became better trained and more experienced in large-scale projects. At the same time, union labour hiring became less efficient and of a smaller scale[3].

Table 5-1 presents an array of construction information, including estimated unionization levels by state, and wage levels by state and segment. As indicated, the New England, Mid-Atlantic, and East-North Central divisions are the most highly unionized in the construction sector. While no official construction union figures are kept by state, it is estimated that about forty percent of the construction labour in these states is unionized. In addition to these regions, Delaware, Missouri,

---

[1]The Associated General Contractors Collective Bargaining Services Survey, produced in 1988, indicated that 47 percent of the work performed by firms operating under collective bargaining agreements was for the public sector. Table 3-2 indicates that only 20 percent of new construction in 1988 was in the public domain. About 90 percent of the respondents also indicated that they had lost market share to open shop contractors, and almost 60 percent envisioned a continued decline in the utilization of union labour.

[2]The danger of being priced out of the market has brought smaller union settlements during the late-1970's and 1980's.

[3]In a 1988 survey, collective bargaining contractors indicated that in order to become more competitive they would be willing to modify fringe benefit payment clauses and to loosen restrictive subcontracting and work rule clauses, overtime and make-up day provisions, and restrictions on allowing contractors the freedom to move workers to different jobs and localities. There is also a trend toward multiyear collective bargaining contracts, with three-year agreements being the most common.

Table 5-1: Construction Unionization, Employment, and Wages in 1987 by Region

	Cons Empl thousands	Approx Union of cons empl	Weekly Wages of Construction Employees by Type of Construction					
			All Constr	Res.Bldg	Nonres.Bldg	Road Cons	Infrastr.	Other Heavy
United States	**4905**	**24%**	**445**	**398**	**497**	**503**	**478**	**530**
South Region	**1887**	**10%-15%**	**~380**	**~360**	**~420**	**~400**	**~400**	**~430**
South Atlantic Division	*1128*	*~15%*	*~380*	*~380*	*~430*	*~390*	*~390*	*~440*
Delaware	20	>40%	387	305	na	393	379	654
Washington, D.C.	15	>40%	475	423	527	551	532	633
Maryland	151	>40%	436	424	571	476	433	508
Florida	159	<10%	339	386	426	401	383	442
Georgia	86	<10%	343	379	434	396	414	442
North Carolina	183	<10%	392	307	406	368	387	338
South Carolina	24	<10%	400	282	457	344	389	342
Virginia	339	<10%	370	378	443	407	404	421
West Virginia	151	<10%	391	255	441	512	473	446
E-S Central Division	*266*	*<10%*	*~360*	*~300*	*~410*	*~440*	*~380*	*~420*
Tennessee	75	<10%	352	311	429	419	377	451
Mississippi	62	<10%	366	233	355	330	332	388
Alabama	34	<10%	316	281	422	362	446	396
Kentucky	95	<10%	375	287	401	485	384	401
W-S Central Division	*493*	*~15%*	*~400*	*~310*	*~410*	*~380*	*~450*	*~390*
Arkansas	34	<10%	326	261	345	359	346	354
Louisiana	34	15%-25%	372	296	410	374	421	467
Oklahoma	344	15%-25%	409	307	409	388	466	363
Texas	81	<10%	389	382	424	381	416	526
West Region	**1824**	**~30%**	**~470**	**~430**	**~600**	**~600**	**~540**	**~600**
Mountain Division	*292*	*~15%*	*~400*	*~400*	*~470*	*~490*	*~430*	*~550*
Arizona	66	10%-20%	436	395	482	504	407	564
New Mexico	14	10%-20%	418	272	385	377	325	431
Colorado	9	10%-20%	396	391	523	521	465	551
Idaho	27	10%-20%	384	293	393	480	415	702
Montana	11	10%-20%	414	281	na	509	488	486
Utah	103	15%-25%	393	282	483	475	433	521
Nevada	32	15%-25%	325	393	580	642	551	na
Wyoming	30	25%-35%	472	na	380	447	492	551
Pacific Division	*732*	*~40%*	*~500*	*~450*	*~650*	*~640*	*~600*	*~620*
California	583	>40%	505	454	670	652	608	617
Oregon	35	20%-30%	413	293	453	484	468	626
Washington	83	20%-30%	423	314	507	528	493	603
Alaska	10	na	765	492	838	943	1088	937
Hawaii	21	na	573	471	632	662	646	na

Sources: U.S. Department of Labour, Bureau of Labour Statistics for wage figures; Construction Labour Research Council for union estimates.
Note: The ~ denotes approximate weighted values for the region and segment in question.

Maryland, and California are also felt to have unionization levels in excess of forty percent. Most of the states in the South and West regions, with the exception of California, have low unionization levels.

Not surprisingly, there is a fairly direct correlation between unionization levels and average wage rates. The highly-unionized New England, Mid-Atlantic, and E-N Central divisions paid weekly wages in the $US 480-520 range in 1987, while the low-union Southern regions paid weekly wages in the $US 360-400 range. For the United States as a whole, according to the U.S. Bureau of Labour Statistics, unionized construction labour received $US 590 weekly in 1987, versus $US 350 weekly earned by non-union construction workers. This and other cost-related matters are discussed further in the following sections.

5.3 COST OF CONSTRUCTION LABOUR

Average hourly earnings of U.S. construction workers have increased at about three percent annually in recent years, slightly below the inflation rate. However, labour costs have run up faster in some of the strongest construction markets, where shortages have reduced efficiency and increased overtime and consequently raised wage rates. Despite the low recent increases, construction remains one of the highest paying industries in the United States, as measured by average hourly earnings and average weekly earnings[1].

As indicated in Table 5-1, labour for residential construction is the least expensive, at less than $US 400 weekly in 1987. Nonresidential construction and road construction wages were about $US 500 weekly, and heavy construction labour was the most expensive at $US 530 per week.

Canadian construction labour costs appear to be comparable to those in the United States. Research from the Conference Board of Canada[2] indicates that Canadian labour costs were 80 percent of U.S. construction labour costs in 1986. However, the fifteen percent rise in the value of the Canadian currency since 1986 has eliminated most of this differential, leaving a two percent margin in Canada's favour. As indicated in Table 5-3, Canadian construction worker's earnings are comparable to American worker's earnings in virtually all types of construction.

---

[1]Hourly construction workers also rank quite high in earnings amongst Canadian industry, although they trail forestry and mining workers by a considerable margin. Salaried construction workers in Canada do not rank highly amongst Canadian industry, trailing most resource, manufacturing and service industries in hourly earnings, according to Statistics Canada information.

[2]Relative Labour Costs in Canada and the United States, Lendvay-Zwickl, Conference Board, 1988.

Table 5-2: Earnings (Mar'89) of Canadian versus U.S. Construction Workers

Region	Average Weekly Earnings ($US)
United States	*496*
Canada	*485*
Newfoundland	460
PEI	325
Nova Scotia	418
New Brunswick	436
Quebec	490
Ontario	505
Manitoba	466
Saskatchewan	382
Alberta	481
British Columbia	456

Notes: Exchange rate in March, 1989 was $US1=$C1.20; Earnings include overtime.
Sources: Canadian data from StatsCan 72-002; U.S. data from Bureau of Labor Statistics.

Table 5-3: Average Weekly Earnings ($US) by Type of Construction; Canada and United States, as of March, 1989

	Canada	*United States*
All Construction	485	496
General Building Contractors	464	464
Special Trade Contractors	481	502
Industrial and Heavy Construction	550	533
Highways, Street, Bridge Construction	503	484

Notes: Exchange rate in March, 1989 was $US1=$C1.20; Earnings include overtime.
Sources: Canadian data from StatsCan 72-002; U.S. data from Bureau of Labor Statistics.

This slight Canadian margin is a considerable improvement from the level of 1976, when Canadian construction labour costs were sixteen percent higher than costs in the United States. Canadian benefit costs[1] also appear to be lower than those in the United States. In 1985, Canadian construction workers received 7.5 percent in benefits on top of labour costs, which is considerably lower than the 17.9 percent in additional benefits received by the average construction worker in the United States.

Appendix H presents the wages of construction trade labourers by individual states. The information in the tables should be used as a convenient future reference for firms bidding on projects and evaluating subcontractors in the United States. For example, for a project in Ohio, one would have paid approximately $US 400 weekly per labourer for excavation and foundation work, $US 470 for plumbing and ventilation work, and $US 320 for carpentry work. By adjusting these benchmark figures forward at approximately the inflation rate (say five percent for each of two years), one could obtain a reasonable estimate for wage figures as of 1989.

5.4 COST OF OTHER INPUTS

While total construction costs excluding land prices increased about two percent between the summer of 1987 and the summer of 1988, American builders have experienced substantial cost increases for certain inputs such as building materials, land, and insurance. Prices of building materials rose about six percent in 1988, while prices for development land rose substantially in some of the strongest construction markets because of market forces and anti-growth restrictions.

Insurance and bonding costs have increased significantly in recent years, although the availability of insurance appears to have improved somewhat during 1988, and annual increases are expected to be smaller as a result. The Association of Builders and Contractors estimate that the health care premiums of its members increased by an average of 22 percent in 1988 and sizeable annual increases are expected for the next few years.

All states, with the exception of Florida and Louisiana, have a lump-sum method of paying worker's compensation. Florida and Louisiana, however, have a system which pays medical bills, while also replacing lost wages. Large premium increases, such as the 29 percent increase in Florida granted in January of 1989, have provoked Florida into addressing their premium and

[1]Includes pensions, health, life and dental insurance, workers' compensation and unemployment insurance.

payment structure and changes are currently before the legislature. While Florida's premium increase was the nation's largest, eight other states have also granted double-digit premium increases during the six-month period from October '88 to March '89. Such increases are justified, according to the National Council on Compensation Insurance, as the insurers' two major costs, namely medical costs and lost wage compensation, have increased by a combined ten percent . There are signs, however, that state regulatory agencies are becoming more aggressive in responding to the rate increase requests of the insurance carriers. If so, granted increases will likely decrease in future years.

As in Canada, interest costs are a concern of U.S. construction firms. As of September 1989, the Federal Reserve Board has pushed short-term bank prime rates to the 11-12 percent range, three percentage points higher than one year ago. Long-term rates have remained fairly stable, however, and economists specializing in nonresidential construction believe that most projects will continue largely unaffected (with perhaps some slight delays) by the movement in short-term rates. Residential construction, being more dependent upon short-term consumer purchasing, is more vulnerable to movements in short-term rates and is expected to slow during the next few years.

A growing export market, and rising steel prices have contributed to recent increases in construction equipment prices. However, while the largest in many years, the average increase in 1988 was still only 4.2 percent.

Appendix J provides overall construction cost figures for certain types of facilities, as well as a cost index which provides a guide to the relative costs of various regions.

SECTION SIX: TAX AND SURETY CONSIDERATIONS

6.1 TAXATION ISSUES

Construction demand in the United States, as in Canada, is sensitive to tax law revisions which influence real estate investments. The complex effects of the American tax reform law of 1986, described in the following paragraph, will affect construction demand well into the 1990's. It is expected that the initial depressing effects of the tax law will be absorbed during the next few years, while the stimulative effects of the tax laws will steadily increase. By the early-1990's, construction activity may well be higher than under the high-incentive tax laws which existed in 1985.

The 1986 tax reform included many provisions affecting the construction industry. Four of the amendments were particularly relevant:

- the Completed Contract Method of Accounting was changed. Whereas taxes could formerly be deferred until project completion (thus helping cashflow), the changed law requires tax payments as various stages of the project are completed. Although mainly aimed at defence contractors with multi-year projects, this sideswiped non-defence contractors as well;
- the Passive Investors Rule, which allowed investors to deduct real estate investment (passive) losses from regular income, was changed such that these losses could only be deducted from passive income;
- the Accelerated Depreciation schedules, typically 15-18 years prior to 1986, were stretched out to 30 years and more, thereby reducing annual deductions. In addition, tax credits of around ten percent (up to $US 100,000) against purchasing equipment were phased out;
- the Capital Gains tax rate was raised from the 20 percent range up to the 30 percent range, thus hurting capital investment.

While these changes were harmful to construction in the short-term, there is an opinion which argues that the tax changes will be beneficial to construction in the long-term, that a tax-driven building frenzy was occurring prior to the changes, and that the changes will help to arrest this frenzy before massive overbuilding occurs. As it was, considerable tax-stimulated overbuilding had already occurred in office and retail construction in some regions. Appendix K lists the corporate and sales tax rates which existed in each state, as of 1988.

Table 6-1: Common Surety Requirements
(source: National Association of Surety Bond Producers)

COMMON FINANCIAL RATIOS:

Ratios and Measures	Calculation	Comfort Range
Liquidity Measures:		
Number of Days Cash	Cash + Equivalent x 360 / Annual Revenue	7 Days or More
Accounts Receivable Turnover	Accounts Receivable x 260 / Revenue	60 Days or Less
Accounts Payable Turnover	Accounts Payable x 360 / (Cost of Earned Revenue)	45 days or Less
Current Ratio	Current Assets / Current Liabilities	Greater Than 1.2 Times
Working Capital to Backlog	Working Capital / Cost-to-Complete Backlog	5% to 10% or Greater
Aging of Accounts Receivable and Payable		60 Days or Less
Average Daily Account Balances		Varies as to Size and Industry
Net Worth Measures:		
Debt to Net Worth	Total Debt / Net Worth	2.1 to 3.1
Fixed Asset to Net Worth	Fixed Assets / Net Worth	10% to 40%
Net Worth to Backlog	Net Worth / Cost-to-Complete Backlog	5% to 10% or Greater
Sales to Net Worth	Annual Revenue / Net Worth	10
Profitability Measures:		
Gross Profit to Sales	Gross Profit / Annual Revenue	Varies as to Industry
Overhead to Sales	General & Administrative Expense / Annual Revenue	Varies as to Industry
Overhead to Net Worth	General & Administrative Expense / Net Worth	60% or Less
NPBT to Sales	Net Profit Before Taxes / Annual Revenue	2% or Greater
Return on Equity	Net Profit Before Taxes / Net Worth of Prior Year	15% or Greater
	Underwriting Criteria	

– This article has been prepared by the National Association of Surety Bond Producers, an association organized in 1943 to enable professional surety bond producers to anticipate and solve problems, to develop professional standards for the industry, and to promote public and governmental understanding and recognition of the value of suretyship.

6.2 INSURANCE AND SURETY MATTERS

American bonding companies have been losing significant sums of money in recent years and are attempting to address the industry-wide problems through tighter reviews and tougher bonding requirements. Surety companies in the United States typically investigate the character, experience and capacity (physical and financial) of a contractor, through evaluating the firm's business plan, organization chart, resumés, completed contract schedule for largest work completed to date, continuity (insurance, employment agreements), references, bank credit, corporate and personal financial statements, and work-on-hand. This information is required to establish a surety program. Once a program has been established, the surety firm will review each project when a bond is requested, looking at:

- type of work and prior experience;
- scheduling fit with current management, field supervision, cash and equipment situation;
- completion schedule;
- current backlog;
- payment terms, insurance, guarantees, and contract language, among other areas.

In addition the surety firm may investigate further should "red flags" arise, such as:

- entering new geographic regions or construction classifications;
- history of profit fading as projects approach completion;
- inadequate or excessive construction volume;
- excessive overhead, receivables, fixed assets, litigation, or complaints.

Table 6-1 outlines financial ratios typically evaluated by surety firms, as well as ranges considered acceptable, as provided in *Constructor* magazine.

Bonding must be secured to match a percentage (usually 100 percent) of the value of the public construction contract and it typically costs the General Contractor about 1-2 percent of the project value depending on the attractiveness of the firm and project. In the United States, any firm can bid on most projects provided the firm has bonding - the onus therefore falls upon the bonding firms to evaluate thoroughly. This contrasts with the situation in, say, Japan, where tight licensing requirements restrict most projects to firms with considerable experience. Japanese firms have had some difficulty obtaining bonding in the United States, as the American subsidiary is often a shell-type company with insufficient assets to sue in the event of a default or failed project.

SECTION SEVEN: PENETRATING THE U.S. MARKET

7.1 BACKGROUND

The worldwide construction business has become increasingly internationalized during the past fifteen years. While American contractors continue to be leaders in international contracting, winning $18 billion in international construction contracts in 1987, the U.S. market share abroad has declined. Furthermore, foreign construction contractors are beginning to make significant inroads into the U.S. construction market. These trends are expected to continue for several years because of declining prospects in Third World markets and increasing foreign interest in the American market.

Foreign owned firms captured 3.5 percent of the American market in 1987, approximately double the share of 1982. Most of these foreign entrants are from Japan, West Germany, the United Kingdom, and France, although a dozen additional nations are represented.

International trade and capital flows are also having an increasing effect on the U.S. construction market. Because of record levels of foreign investment in the United States, a growing share of U.S. construction projects is being built for foreign owners. Foreign direct investment in the United States is chiefly in manufacturing facilities, warehouses, office buildings, and hotels, and foreign contractors may therefore capture increased shares of these construction segments.

In gaining market share, as described above, these firms have faced certain barriers and obstacles. Prior to making a decision to enter the relatively-open American construction market, Canadian firms should be aware of the types of barriers they may face. These are discussed in the following pages.

7.2 BARRIERS TO ENTERING THE U.S. CONSTRUCTION MARKET

The American construction market is relatively open to foreign construction contractors, with few legal restrictions. On most construction projects, the foreign contractor is free to bid on an equal basis with American contractors and the contracts are generally let on the basis of sealed bids priced on a lump-sum or unit-price basis. By virtue of being a NATO country, Canada also has access to most defence projects, whether being in the United States or U.S. funded projects abroad.

Many large construction projects are undertaken by state and local governments. American state and local governments spent some $US 74 billion on construction in 1987, of which state

governments accounted for 38 percent, county governments for 12 percent, municipal governments for 26 percent and school districts for 8 percent. Not surprisingly, state expenditure levels are in line with population size, as California, New York and Texas account for the largest volume of state procurement, each with 8-9 percent of the $US 74 billion total. These expenditures are detailed in Appendix G.

These procurements are not covered by the FTA chapter on government procurement. At least 32 states and many local governments routinely include domestic preference clauses in their contracts. Some of these clauses are intended to favour local suppliers, while others favour American products in general. If there is any question of whether or not Canadian materials are eligible for a contract, prospective vendors should refer to a copy of the bid documents or contact the contracting officer directly.

7.2.1 Buy American[1]

As detailed in Appendix G, federal government construction expenditures in 1989 totalled $US 15 billion through direct programs, $US 23 billion through grant programs, $US 10 billion through loan programs, and $US 69 billion through loan guarantee programs.

The Buy American Act of 1933 is laid out under Title 48 of the Code of Federal Regulations and is available from the U.S. government printing office. It is the most significant U.S. federal legislation limiting the use of Canadian materials in U.S. public sector contracts. This Act generally requires price preferences (six percent on most contracts; twelve percent on those contracts partially set aside for U.S. small business or labour surplus areas) to be applied in favour of domestic products.

Construction materials purchased by the U.S. federal government are covered by the Free Trade Agreement, under Federal Supply Class 56, and are therefore exempt from the Buy American Act. However, very few U.S. government departments or agencies purchase construction materials alone - these commodities are nearly always procured as part of a contract for construction services

[1]More detailed information on state and federal practices is available at the Canadian Embassy in Washington. Firms which are considering supplying construction materials to a U.S. public work, and are not sure whether the Buy American Act applies, should contact the Embassy. For information concerning contracts with the Department of Defence, including the Army Corps of Engineers, call Max Reid, Counsellor, Defence Programs, at (202) 682-7743. For information concerning civilian departments and agencies, call Judy Bradt. Commercial Officer, at (202) 602-7746.

and, as such, are covered by the regulations and laws affecting services in government procurement.

Services are not covered by the FTA chapter on government procurement - the Buy America Act will therefore apply for services which are tendered by the U.S. Federal Government. Furthermore, some U.S. federal departments and agencies responsible for a great deal of construction activity are excluded from FTA coverage. Any materials tendered as part of a services contract are subject to a 6 percent or 12 percent price preference for U.S. firms.

Section 48 CFR 25.2 of the Buy American Act requires that only U.S. domestic construction materials be used in the construction, alteration, or repair of any public building or public work in the United States. Contractors may apply for a waiver of this provision citing cost, practicality, or insufficient quality or quantity of the material available in the United States. The contracting department or agency then decides whether or not to grant the waiver.

In these instances, several difficulties commonly arise. The waivers have to be granted in advance, to the prime contractor. Frequently, the prime contractor is unaware, until after the fact, that Canadian materials have been used and has therefore not applied for a waiver in advance. In certain cases, contractors would prefer not to go through the bother of holding up the project while waiting for the waiver, even if the Canadian product is less expensive. Occasionally a contracting agency wants the Canadian product badly enough, and officials will go to considerable effort to assist, although this is uncommon.

A common occurrence is that a Canadian producer will sell materials to a U.S. distributor, who in turn supplies various subcontractors to a federal public works project. When these materials arrive on site (sometimes after installation), and are discovered to be not made in the United States, and no waiver in place, they are removed or sent back as not meeting the Buy American contract requirements - at great expense to everyone concerned.

The U.S. Army Corps of Engineers undertakes a significant number of public works projects in the United States, and is specifically excluded from coverage by the Government Procurement Chapter (Chapter 13) of the Free Trade Agreement. The Army Corps must therefore apply the Buy American Act (both the provisions for goods as well as the section on construction materials) to its contracts. If the Army Corps desires certain Canadian materials, it may be possible to sell them to

a non-construction acquisition centre as a supply contract. The Corps could then supply them to the contractor for use in the project as government-supplied material.

While the U.S. Naval Facilities Engineering Command and the Air Force Construction Command are not specifically excluded from FTA coverage, construction contracts with these organizations are still considered services contacts, and therefore excluded from GATT and FTA rules. Canadian companies have experienced lengthy and costly disputes in selling construction materials to these organizations, although some have eventually been resolved in favour of the Canadian company.

7.2.2 Building Codes

Various organizations within each state have their own building codes which apply to all private and public construction contracts in the region. There are some 17,000 building permit issuing areas in the U.S., as virtually each county has its own code and its own unique requirements. This can occasionally cause approval delays and regulatory inconsistencies from state to state.

In the course of conducting this study, it was suggested that government inspectors in the United States tend to "demand their pound of flesh" and adhere strictly to the building code. While this may represent a difficult obstacle because of the interpretive nature of the codes, the Canadian firms with whom we spoke generally did not describe these as causing major problems. Canadian firms considering entry to the market should however be aware of the view expressed by a specialist within the Commerce Department that building codes, while not overly onerous, do represent the most significant obstacle to entering the relatively-open market.

ENR Magazine, in its June 22nd, 1989 issue described the code situation as much improved from previous years, citing a 1989 study by the Federal Trade Commission which estimates that 95 percent of all U.S. cities are covered by one of three model (private sector) construction codes. These three codes are: the *Uniform Building Code*, published by California-based International Conference of Building Officials (ICBO); the *National Building Code*, published by the Chicago-based Building Officials and Code Administrators (BOCA); and the *Standard Building Code*, published by the Southern Building Codes Congress International (SBCCI) based in Birmingham, Alabama.

The *ENR Magazine* issue also noted that 31 states have adopted statewide building codes, and many states and cities are improving the training and certification of building inspectors. Canadian firms should examine the building code situation in regions of interest, as some areas such as Chicago have antiquated (last comprehensive review in 1939) codes which are often conveniently interpreted by powerful unions and bureaucracies. Many cities such as Denver and Chicago have recently hired aggressive Inspection Commissioners with a mandate to clean up the permit process.

7.2.3 Other Barriers

In addition to the Buy American legislation, there are other exceptions to the general rule of open bidding to all parties. The following list of market constraints and barriers is based upon information from specialists in the U.S. Department of Commerce and other sources:

- Each state has its own **state licensing and registration requirements** for engineers and architects. This occasionally causes licensing delays although this has not been cited as a major issue by the Canadian firms with whom we have spoken.

- U.S. immigration laws prohibit the use of foreign nationals for most **on-site construction work**. By requiring foreign contractors to use American workers, these laws prohibit contractors from lower wage nations from using one of their major competitive strengths. There is some discussion in the current GATT round regarding having labour classified as a tradeable service, although American negotiators view this as infringing upon matters of immigration.

- The **Brooks Act** procedures for selecting architect-engineering (A-E) firms may constitute a barrier to entry for some foreign A-E firms, although the same restrictions would apply to American A-E firms who want to start doing business with their Federal Government. The Brooks Act prescribes that Federal A-E contracts be awarded primarily on a "most-qualified"[1] basis rather than a "lowest price basis". The top ranked A-E firm then negotiates the price with the contracting agency. If there is no agreement on price, the contracting agency may then negotiate with the second ranked firm. While this procedure makes it harder for a foreign firm to buy a foothold by bidding low, it is more lucrative after the foreign contractor has obtained entry. Furthermore, this procedure allows a foreign

[1]Based on technical competency, experience, past performance and on the quality of their proposal or methodology on a specific project.

Table 7-1: State Procurement Laws Affecting A-E Firms

Arizona	Permits either use of Brooks Act procedures or solicitation of price proposals.
California	Follows Brooks Act procedures.
Colorado	Follows Brooks Act procedures.
Connecticut	Follows Brooks Act procedures.
Delaware	Follows Brooks Act procedures.
Florida	Follows Brooks Act procedures. Recent court decisions interpret the law as not prohibiting solicitation of price proposals when the scope of work can be clearly defined.
Georgia	Permits either use of Brooks Act procedures or solicitation of price proposals.
Idaho	Allows use of Brooks Act procedures.
Kansas	Follows Brooks Act procedures.
Kentucky	Follows Brooks Act procedures.
Louisiana	Establishes qualifications-based A/E selection similar to the Brooks approach. A/E fees are pre-established by state agencies.
Maine	Establishes qualifications-based selection without specific outlined procedures.
Maryland	Requires qualifications-based selection for all DOT contracts, and all DGS contracts over $100,000.
Massachusetts	Establishes qualifications-based selection procedures.
Minnesota	Follows Brooks Act procedures.
Missouri	Follows Brooks Act procedures.
Nebraska	Follows Brooks Act procedures.
N.Hampshire	Follows Brooks Act procedures.
New Mexico	Follows Brooks Act procedures.
New York	Follows Brooks Act procedures.
North Dakota	Follows Brooks Act procedures.
Oklahoma	Follows Brooks Act procedures.
Pennsylvania	Generally establishes qualifications-based selection procedures.
S.Carolina	Follows Brooks Act procedures.
Texas	Establishes qualification-based selection procedures. According to a recent ruling, the law does not prohibit discussion of cost or fee estimates during the selection process.
Utah	Follows Brooks Act procedures.
Virginia	Follows Brooks Act procedures.
Washington	Follows Brooks Act procedures.
Wyoming	Establishes qualification-based selection procedures that permit discussion of non-binding fee estimates.

Notes: A number of other states that do not have state A/E procurement laws, including Alabama, Illinois, and Wisconsin, generally adhere to Brooks Act selection procedures.
Source: U.S. Department of Commerce

contractor to buy access by acquiring a high-quality American A-E firm. As indicated in Table 7-1, most states apply the Brooks Act in selecting A-E firms.

- The **Davis-Bacon** legislation was established in 1933 by Congress to stabilize construction wages during the depression years. The legislation, which most states have also adopted, requires that "prevailing wages" be paid on publicly-funded projects. These wages are usually laid out in the bid documents and over the years have become synonymous with union-level wages. There is an ongoing dispute with the Department of Labour in the area of defining what constitutes a publicly-financed project, and what should therefore be subject to the wage requirements. For example, should a build-own-transfer project or leased project be considered publicly funded? Similarly should off-site workers also be included under the act or simply workers actually on the construction site? While the Davis-Bacon legislation levels the playing field between union and non-union contractors in terms of wages that must be paid on public projects, it does not affect the work rules or the manner in which crews can be managed.

- The **Surface Transportation Assistance Act** established preference requirements for federal grant aid that is distributed to state and local governments for the funding of construction of highways and bridges, and the purchase of vehicles for mass transit systems. When using funds under this act, state and local governments must establish at least a ten percent margin favouring American rolling stock, and at least a 25 percent margin for purchases of steel. Construction services are not affected by this Act.

- **"Disadvantaged business enterprise" set-asides** are intended to give preferences on publicly-funded projects to certain disadvantaged groups, such as minority-owned contractors, female-owned business, or small business. These restrictions have excluded major foreign contractors as well as major American contractors from some construction projects. Foreign firms or a majority-owned U.S. subsidiary would qualify for federal set-asides[1] if they met the criteria of a small or minority-owned business. To qualify as small businesses, firms must be independently owned and operated, not dominant in their field, and have average annual receipts for the preceding three fiscal years of less than $US 17 million. To qualify as minority-owned businesses, firms must be owned by members of named groups (Black Americans, Hispanic Americans, and Native Americans) considered

[1] meaning certain portions of public contracts would be reserved for qualifying groups

socially and economically disadvantaged. Information compiled during the Free Trade Negotiations indicates that eighteen state governments also have set-aside legislation - a number which has likely increased since 1986. In discussions during this study, one U.S. executive expressed the opinion that city and county projects have teeth in their set-aside requirements, while federal projects tend to have less rigid requirements aimed at encouraging firms to adhere to them. The legality of business set-asides was brought into question in January, 1989, when the U.S. Supreme Court ruled that a city ordinance channelling one-third of public works funds to minority-owned construction companies in Richmond, Virginia violated the constitutional rights of white contractors.

7.3 STRATEGIES OF FOREIGN CONTRACTORS IN THE U.S. MARKET

In a recent survey by *ENR Magazine*, five reasons were most commonly cited for investing in the American construction market:

- the volume and diversity of the work;
- the stability of the market;
- the ease of doing business;
- a good understanding of contract terms and procedures;
- an assurance of getting paid.

Fred Moavenzadeh of the MIT Center for Construction Research and Education discussed the strategic reasons behind increasing foreign investment in his 1989 paper *Presence of Foreign Firms in U.S. Engineering and Construction Market*. In this paper, he argues that competitive advantage (ie. tunnelling expertise, financial backing, alignment with developers) causes firms to establish (usually through acquisition) autonomous U.S. companies and to profit from the market benefits cited above. Other motives for investment, in Moavenzadeh's view, include balancing cyclical home markets, enhancing the owner's success vis-a-vis American firms in other (third-country) markets, and hedging future exchange rate fluctuations. To achieve these goals, foreign firms have chosen many routes of entry including:

- establishing a representative office - some European firms, such as Ilbau of Austria, have succeeded through maintaining a representative office in the U.S. to identify, bid and negotiate subcontracts in which its tunnelling expertise give it an advantage. When a contract is obtained, the firm send staff and equipment from Europe to perform the work;

- establishing a branch office - large Japanese firms have been the main practitioners of this strategy, wherein the local office gathers market information and perform construction services, usually for Japanese clients;
- forming a subsidiary - the original intent of the large Japanese entrants was to create subsidiaries from the ground up. This strategy has been virtually abandoned in favour of the acquisition route, indicating the risk, cost and time associated with creating a new organization;
- making an acquisition - since the late-1970's, this has been the preferred route for foreign entrants to the American market[1]. Given that few U.S. construction firms are publicly traded, acquisitions are generally negotiated, friendly, and of majority or minority stake. Acquisition of stakes less than 10 percent are considered to be portfolio type investments while those of 10-25 percent often indicate a two-step approach to market entry;
- entering a joint venture - joint ventures are a good way of getting to know local markets while benefitting from technical, financial, risk sharing, and/or political considerations. Such an approach is not intended to fulfill long-term goals;
- forming a long-term cooperative relationships - these types of relationships are common in manufacturing industries, although rare in construction as it is difficult for two cooperating contractors to maintain individual identities and advantages over a long period of time.

Until 1982, most of the foreign participants in the American construction market were European and Canadian firms whose participation usually resulted from their acquisition of existing American construction companies, rather than from their competitiveness in winning particular construction contracts. Since 1982, European firms have continued their interest in the U.S. market, while most of the growth in foreign penetration has come from Japanese construction companies.

To date, these Japanese firms have typically preferred to establish branch offices in the U.S., rather than to acquire American companies (although they have also made thirteen acquisitions during the past decade). These firms use American subcontractors and materials, while relying on their home offices for much of the engineering and overhead services.

[1]Of the nearly $US 9 billion in American construction contracts awarded to foreign-owned firms in 1987, about 70 percent went to American firms that had been acquired by foreign interests, and 30 percent went to the U.S. branch operations of foreign firms.

The foreign entrants (Appendix F) to the American market rank among the largest construction companies in the world. Most were attracted to the large and growing U.S. market after the construction boom in the Middle East and Third World countries ended in the early 1980's. Many of these firms possess competitive advantages that have helped them penetrate the U.S. market, such as financial strength, technological expertise, and under-utilized staff. The foreign share of U.S. construction contracts will likely increase over the next five years, as foreign contractors and foreign real estate investors gain experience in the United States. In addition, Japanese construction companies have the advantage of close relationships with Japanese manufacturers and real estate investors who tend to rely heavily on Japanese contractors to build their facilities in the United States[1]. If future Japanese direct investment is more open to competitive construction bids, a significant market niche could open up for non-Japanese contractors.

Future increases in foreign market share will be due more to new acquisitions of U.S. contractors than to the internal growth of existing operations. Acquisitions are especially attractive to foreign contractors as they are usually less expensive than establishing new operations, and the established American companies appear to be more successful in winning competitively-bid projects than satellite branch offices.[2]

In entering the market, it appears that most of the foreign entrants are well capitalized and willing to give their investments a decade to prove their worth. Indeed, this appears to be a requisite for market entrants, as statistics compiled by the U.S. government suggest that foreign construction firms, to date, have operated in a loss position in the American market during the past five years[3]. As foreign contractors become more firmly established in the United States, it is expected that they will become more efficient in operational matters and more proficient in technological areas.

7.4 RECOMMENDED ENTRY STRATEGIES FOR CANADIAN FIRMS

For reasons of market size, openness, and proximity to the border, Canadian firms have been engaged in construction projects in the United States long before the existence of the Canada-U.S.

---

[1]This is similar to the advantage which American contractors have long held in Canada, conducting work for the Canadian subsidiaries of U.S. parent companies.

[2]other reasons for mergers in general, according to Brierly and Myers, include economies of scale, vertical integration, potential tax shields, redeployment of cash surpluses, and managerial improvement.

[3]Worldwide, it appears that international firms are more profitable on international work than domestic work. *ENR Magazine*, in examing construction firms worldwide, indicates that the Top 250 International Firms (55 firms responding to the profitability question) made an average profit margin of 5.1 percent on foreign work in 1988, while profit margins on work in their home countries was 4.1 percent.

Trade Agreement. For example, a November, 1988 study conducted by Industry, Science and Technology Canada surveyed 61 construction projects undertaken internationally by Canadian contractors, of which 23 were projects in the United States. These generated average billings of $C 7.3 million[1]. A common rationale behind these jobs is not unlike that faced by one Alberta firm who viewed the Seattle market as making more sense than the Toronto market. The slow progression of talks aimed at eliminating inter-provincial trade barriers[2] in Canada may also stimulate Canadian firms to examine markets south rather than simply east and west.

The Free Trade Agreement will increase the attention of Canadian business on the American market. In preparing this section, we have discussed the subject of market entry with many Canadian and American sources. These sources were primarily contractors currently or formerly active in the U.S. market, although academic and other opinions have also been incorporated. Based on these discussions, we have highlighted various market entry observations and recommendations (in no particular order), as follows:

Actions:

1) Successful penetration of the American construction market begins at home.

In the U.S. market, as in any international market, the odds of successful penetration are increased if the firm bases its strategy upon its domestic expertise and advantages. For example, Canadian firms who are comfortable with certain developers in Canada may facilitate entry into the U.S. market through following these developers south. The example of PCL and Oxford was cited in this regard. Developers such as Olympia and York, Bramalea, and ManuLife are also active in the U.S. market. Good working relationships with Canadian architectural and engineering firms would also ease matters should these design firms decide to bid on projects in the United States. Among others, engineers such as DelCan and architects such as Webb Zarafa are active in the American market.

Given the trend toward "value engineering", strategic alliances such as joint ventures or equity arrangements between Canadian developers, architects, engineers and contractors may increase the odds of successfully penetrating the U.S. market. The chances of success would further increase

[1]Exports contributed 20 percent of the annual business of these internationally-active contractors.

[2]As described in the September 12th, 1989 Globe and Mail, contractors in New Brunswick face problems in Quebec and Nova Scotia (and vice versa) and political representatives are threatening withdrawal from the slow-moving negotiations. States the head of a CCA task force, "it's easier for a New Brunswick contractor to get work in Maine than in Quebec".

if the firm were also aligned with a partner in the United States. As one U.S. construction executive revealed, "if the developer for the Maryland project (a prominent Canadian development firm) had specified that the job was mine provided I aligned with a Canadian contractor, of course I would have".

It was recommended to us on several occasions that penetration of the U.S. market would be smoother if the contractor were aware of, or aligned with, Canadian players already operating in the United States. While closer alignment between contractors, developers and AE firms is commonly recommended in studies of this nature, it is worth noting that other alignments may also take place. An example which was cited was that of the Toronto Transit Consultants providing expert advice to the Bay Area Transit Authority (BART) in the San Francisco region. The TTC has provided consultation based upon its experience in trolley car operation - contractors on good terms with the TTC would potentially be able to spread its reputation to San Francisco and other cities in this manner. Similarly, the Seattle transit authorities have made several trips to Ottawa to investigate its impressive bus transit system - presumably this would provide the contractors experienced in the Ottawa system with a "leg up" in bidding on Seattle bus tunnels and related projects. American transit authorities in general are impressed with Canadian transit systems (80 percent operating cost recover in Ottawa and Toronto versus perhaps 40 percent for a normal American system). MCI, and Bombardier's TGI are prominent suppliers of vehicles to American transit authorities and linkages may be worthwhile with these firms as well. Laidlaw is another Canadian firm active in the U.S. market, providing industrial waste services in 20 states, municipal waste services in 15 states, and transportation services in many U.S. cities. Information, advice, and introductions may also be derived through appropriate contacts with firms such as Laidlaw.

2) Canadian firms should have a strong local partner.

Those contractors who are not aligned with a local American player should be aware that the problems experienced by Canadian contractors in the U.S. market, where they have arisen, have generally stemmed from a lack of knowledge, experience and connections in the particular region in question. One prominent construction firm, for example, ran into difficulties several years ago with a major road contract in California. In submitting the bid, contractual estimates were based upon documentation which turned out to be inaccurate, and the firm lost a large amount on the project. In this particular instance, the rock base for the project was not the solid, igneous type which was expected, but was, rather, soft and sedimentary and prone to shattering. A significant amount of unanticipated concrete pillaring was required, and the firm lost an estimated $1 million

monthly, and almost went out of business, as a result. Other firms have also encountered unexpected problems which have stemmed from a lack of familiarity with the region. For example, soil conditions in the Syracuse vicinity went unreported to one Canadian firm and subsequent problems led to the firm ending up in court.

Another large Canadian firm, having already established a presence in the U.S. with a local partner, decided to bid on its own on a couple of projects in a nearby city, a decision which it later classified as "a big mistake". The firm won one of the projects - a $16 million bridge contract. However, operating in unfamiliar territory, the firm subsequently encountered problems both with the local unions and with the state Department of Transport who "had more inspectors on site than we had staff". After its near brush with bankruptcy, this firm's recommendation for future Canadian entrants was that they join with a local partner in all U.S. projects, even if already established elsewhere in the U.S., and even if only to the extent of granting a 10-20 percent ownership to the local firm.

Such problems have also plagued large American firms when attempting to enter a new region. Morrison Knudsen, a $US 3 billion contractor, were unsuccessful in entering the Philadelphia market because of union friction. Blount of Alabama failed to penetrate the Boston market, while Brown and Root failed in the Washington, D.C. market. Thus, problems associated with penetrating new regions do not appear to discriminate between out-of-country and out-of-state entrants.

3) In most joint venture projects, it is recommended that the partnership name reflect the local partner's name in a prominent position.

Based upon its considerable experience with Canadian mass transit projects, one prominent Canadian contractor entered into a joint venture arrangement to bid on light rapid transit projects in a northeastern U.S. city - the venture subsequently won a substantial project. While the bids were prepared in Canada, and the designated project manager and project engineer were Canadian, the local American partner played an active role in the "public aspects of hiring and firing labourers and suppliers". The higher profile for the local partner helped to minimize labour animosity and keep local suppliers happy.

Canadian contractors which operate inter-provincially may already be experienced at "playing the local card", wherein local partners or acquisitions are pursued in order to increase the chances of success. Similar strategies are recommended for the American market.

4) Canadian firms should select their joint venture partners carefully.

While joint venturing is a recommended approach toward entering the regional market, Canadian firms should be aware of the sentiment, as expressed by one Maryland contractor, that "local partners are entirely aware that they may be educating a potential competitor through joint venturing".

For this reason, American firms may be more likely to align with a local, already-existing competitor than with a Canadian firm. However, Canadian firms with specialized expertise, and/or companies willing to be minority partners, would be attractive joint venture candidates in the view of this executive.[1] In this instance, the five key people potentially to be involved in the project would be scrutinized and possibly interviewed by the local American player.

This executive warned that Canadian firms adopting strictly a "to enter the region, find a joint venture partner" strategy may be prone to interesting only those local firms who lack bonding capability - that is companies who do not have a good financial history. Canadian firms should obviously be sensitive to this possibility when seeking potential local partners.

There are instances, however, where even an entrance via a poorly-financed partner has turned out successfully. For example, the initial entry for one Quebec company stemmed from their bonding company's American affiliate having been approached by a U.S. construction firm in immediate need of equity. The resulting joint venture entered into by the Quebec firm ended up winning a $38 million road construction job in New York State. The project, benefitting from the U.S. partner's labour pool and local "know how", was completed smoothly, profitably and free of labour problems despite the high unionization rate in the region. The projects, which were in Buffalo, were funded 80 percent federally and 20 percent state government and publicly-tendered

[1] Another U.S. executive suggested that Canadian firms would be brought in as local partners if the developer made this a prerequisite to winning the job - that is "50 percent of something is greater than 100 percent of nothing". Foreign partners would also be brought in if the local firm was not independently qualified for the particular job and "could ride along and learn something". This executive suggested that his firm would examine and evaluate all joint venture proposals based on their individual merits and based on the company's workload at that point in time.

to firms with a principal line of business in New York State. The joint venturing then also allowed the Canadian partner to accommodate this requirement.

5) In the opinion of one executive, "buying a company or buying some people is preferable to paying your dues and losing money. This is the route to go".
In the event that Canadian firms do buy their way into the U.S. market, it was recommended by the executives and association sources with whom we spoke that the local firm be left reasonably autonomous, "buy it then leave it alone". The construction industry is one where local contacts, entrepreneurial flavour, and key corporate individuals play a major role. Radical change in any of these may cause key people to leave and may over time render the firm a bit player in its regional market.

In one instance, a Canadian firm made a very minor U.S. acquisition, primarily to obtain a client list as a base from which to start its business development. This firm was of the opinion that acquisitions of contractors involved simply "equity and people" and that an acquisition that did not evaluate these two requisites would be destined to fail, whether in Canada or the United States.

It was suggested that, as of September 1989, price/earnings ratios of 8-10 [1]were typical of private acquisitions in the contracting industry.

6) Entrants into the American market should be prepared to "pay a price" in terms of committing substantial time and resources to the marketing effort.
Many individuals with whom we spoke felt that firms should be willing to devote substantial time and effort in order to enjoy long-term success in the U.S. market. American firms are "more throat-cutting" than Canadian contractors and gentleman's behaviour is often not widely respected. As expressed by a dispute resolution expert, "the only fair treatment in the U.S. is what brings in dollars."

However, while the requirement for long-term commitment may be true in a general sense, there have been exceptions to this requirement. For example, one Canadian firm with whom we spoke was successful on its first bid - a joint venture - in the U.S., while another respondent "bid on a

[1]For the U.S. as a whole, public companies trade hands at a considerably higher ratio. The average purchaser in the United States (during the year preceding July 1989) paid a price twenty times the annual earnings of the seller, and 1.5 times the seller's annual revenue. This applies not just to public construction firms, of which there are very few, but rather to all public firms in the U.S. which were acquired during the year.

number of contracts, spending $125,000 over a seven month period, before winning contracts for $US 80 million". In these instances, it appears that certain qualified firms can prepare bids through their Canadian office, and stand a reasonable chance of winning American projects during the course of a year.

In the opinion of a New England academic, a strategy of maintaining low U.S. overhead, and entering the market through "hit and run" (ie bidding, winning the odd job, then moving elsewhere) could be successful for small Canadian firms. This opinion, however, is contrary to commonly accepted wisdom regarding penetrating foreign markets. It is also contrary to the strategy which the Japanese contractors are adopting in entering the market - they typically adopt a ten-year strategy toward long-term profitability in the American construction market.

7) For a number of reasons, the establishing of a U.S. corporate subsidiary is recommended.
The satellite office should be able to handle the banking, subtrading, and cash flow through establishing contact with a local bank. There were no problems conveyed to us regarding working with American banks. In handling taxes, firms typically establish a U.S. subsidiary which pays taxes on its revenue accrued from U.S. projects during the year. While the tax system is generally felt to be quite similar to that in Canada (although rates are lower), one firm did feel that the calculation and payment of federal, state, county and municipal taxes in the U.S. was more time consuming than in Canada.

8) Maintaining tight control on overheads is considered essential in the U.S. construction industry.
Examples of Japanese firms opening large, posh offices on Fifth Avenue in New York to impress potential clients are commonly cited in the industry - such a path is considered ineffectual. The industry leaders in the various regions typically run very tight ships paying close attention to bidding and cost control. Lacking the financial backing of Japanese contractors, Canadian firms are also advised to maintain tight control over their finances and cash flow. One executive with a development firm suggested that contractors with high overheads inadvertently provide developers with a price bargaining edge as they then know that the contractor must take on work to cover overheads.

9) Canadian firms should join the local association and read the local journals.
Certain Canadian Consulate officials suggested that Canadian firms, in penetrating the American market, join the Associated General Contractors as a ticket in to the market. The association provides a wide range of services, as described in the Appendices.

There are many sources of information which firms should cover to stay abreast of relevant happenings. Some of these are listed in the Appendices, although key regional sources should become evident upon spending a few days in the area. In Seattle, for example, the Daily Journal of Commerce is very important, as it alerts contractors to various projects 60-90 days before bid deadlines.

10) For a wide variety of reasons, firms are well advised to contact the responsible Canadian Consulate, and attend appropriate trade shows, when considering entry into a particular regional market.
Commercial officers at the Consulate (Appendix E) are quite knowledgeable, helpful and responsive. Information concerning local lawyers, engineers, procurement officers, and a host of other areas is readily available through the Consulate. Introductions are also made by Consulate officers, although officers request that introductions, when made, are followed through by company officials, as introductions which are not followed through reflect poorly on the image of the Canadian government and Canadian industry.

Consulate officials also arrange trade missions in their region, the corporate costs for which are half-coverable through the PEMD[1]. Potential exporters should note that trade shows, seminars, and conferences are a useful method of both, marketing goods and services, and establishing contacts. The Canadian Construction Association may wish to initiate discussions with External Affairs and International Trade to arrange a series of trade missions pulling together those Canadian firms considered qualified to offer serious export potential.

11) Canadian contractors should be much more active abroad and, where feasible, should be registered with agencies such as CIDA as both contractors and engineers.
During the past fifteen years, the federal and various provincial governments have been very active in assisting Canadian engineering firms in exporting services. However, contractors have often

[1]As described in the Appendix, the Program for Export Market Development is a very popular method of becoming acquainted with new markets, among other objectives, at a reasonable cost to industry.

not pursued CIDA finance projects, even though it is not unusual for contractors to have 50-100 engineers on staff. Furthermore contractor's engineers are arguably more experienced, hands-on and pragmatic than those in consulting firms, and may be well qualified to benefit from CIDA and other international funding. While this suggestion may not be directly relevant to the U.S. market in the short-term, the larger and more internationally-experienced contractors will stand a better chance of succeeding in the U.S. market over the long haul. Canadian contractors which continue to simply "roam in their backyard" will likely remain small and see decreased earnings in future years.

12) Canadian governments should make every effort to increase the service industry awareness of officers at U.S. posts.

As discussed in an advisory paper for the Uruguay GATT negotiating round, Canadian Consulates, in frequently moving their sector officers, reduce the knowledge and contact base of the responsible officers. They are, as a result, described in the paper as being less effective than their Japanese and European counterparts[1]. As it may take 2-3 years for government officials to establish local contacts in certain industries, the posting of locally-engaged officers for longer periods of time should be considered.

13) Firms should visit the region in order to "get a first-hand feel" for the environment into which they are considering entry.

It was felt useful by some firms to, as a market-entry step, talk to local union representatives, associations and other contractors, as well as to observe ongoing projects in order to increase their comfort level prior to bidding. One Quebec-based contractor, prior to opening an office in the U.S., sent its President and a second employee down separately to survey and talk with various individuals in the Carolina's, Florida and Georgia region. After comparing notes, and evaluating which location could best serve the Defence and Aerospace markets, they selected an office location. Such a strategy - spending time to understand the market, then making a commitment to the region - is recommended. Having entered the region, the firm should then maintain regular contact with the major developers in the region to monitor their activities.

[1]Similarly, organizational difficulties at the Federal Industry Department has limited its effectiveness in recent years in helping Canadian contractors enter foreign markets.

14) Canadian firms may have a cost and timing advantage over their American competitors through maintaining flexibility in managing individual projects.

One Canadian construction firm is of the opinion that the U.S. competitors are more rigid in their project management function, where often one or two project managers, superintendents, engineers and office managers are hired at the start of the job and remain in these positions until the completion of the job. Canadian firms, on the other hand, staff the managerial functions with fewer people and maintain a flexible approach regarding how long a particular individual will remain on the job. For example, the project engineer will often be moved onto another job upon completion of the planning and costing aspects, and may be called in as required on other occasions. American firms "would have these people there twice as long" and at twice the cost.

Be Aware:

15) As discussed in the unionization section, while unions overall are in decline, there still remain certain regions of the U.S. where unions have a significant presence.

The heavily-unionized Northeastern states were described by one Canadian firm as being averse to foreigners and potentially quite troublesome (out-of-country firms and out-of-state firms are generally grouped together in this respect). Situations such as forcing a non-union trucker to unload steel outside the construction site so that a Teamster truck could carry it into the construction site are not unusual. Canadian entrants should be aware that such obstacles potentially exist in the high union areas, particularly in the Northeast.

On the other hand, one firm with whom we spoke felt that project labour agreements and other matters were handled more smoothly with the American unions than with their Canadian unions. The lack of distinct seasons in the southern regions eliminates many of the time and negotiating pressures which exist in regions with harsh winters. Union relations may therefore be more harmonious in the Southern and Western States.

In active regions, such as California and New England[1], the construction unions have virtually full employment which means that companies with poor ties to the union hall are likely to end up with the "bottom of the barrel" in terms of labour quality. Linking with a firm with strong union ties will help avoid such a situation.

[1]note, however, that the New England economy slowed considerably during 1989.

Many non-union firms, not having access to union-hall labour pools, have established informal communication networks with each other, wherein labourers are quickly moved from one firm's project at completion onto another contractor's project if and when required.

16) Canadian contractors generally feel that U.S. construction labour is comparable in quality and cost to that in Canada.

In a New York State transit project, for example, the electrical and mechanical work was sub-contracted to the top local firms and their work was described as "excellent". In a Seattle transit project, the electro-mechanical subtrades are "of similar quality and expertise" to those in Canada. It was mentioned to us by one firm that American subtrades are less sophisticated in their pricing policies and that some subcontractors expect to renegotiate, with the winning contractor, the initial quotes which they had submitted at tender time. Canadian contractors should be aware of this possibility when reviewing the initial submissions.

17) It is felt that, on average, the American market offers comparable or slightly higher profit margins than the Canadian market.

For example, one contractor active in the United States estimated that the profitability on commercial buildings in the Eastern U.S. extends up to the ten percent range, compared to around five percent for buildings in Toronto or Montreal, while another estimated that the gross margin in the U.S. was double that for his office projects in the Montreal and Toronto markets.

One commercial developer in California estimated that a $US 20 million office project would produce a return to the general contractor of three percent, down from the 4-5 percent level of five years ago. In addition ,where the contractor is involved in some design "value engineering" aspects, its profit could increase by about one-third.[1] California association representatives estimated that profit margins in the four percent range for office and commercial developments were attainable in the state provided the contractor had good relations with the developer.

Amongst other interviewees, none felt that the American market was less profitable, although some were of the opinion that the two markets offered comparable profitability. The profitability on

[1]Being involved in the design stage does not appear to guarantee that the contractor will receive the construction contract. It was suggested that in many cases the developer will put the job out to bid, despite having worked with one contractor during the design stage. Canadian firms should be aware of this possibility.

heavy civil projects in the United States is generally higher than on bonded buildings and other secured projects.

18) Canadian firms should be aware that foreign construction companies as a group are suffering losses on their U.S. activities.

The Department of Commerce's *1987 Survey of Current Business* shows the Net Income position of Foreign Direct Investment Construction Firms as being a loss of $US 27 million in 1981, a loss of $US 44 million in 1982, a profit of $US 13 million in 1983, a loss of $US 65 million in 1984, and a loss of $US 133 million in 1985. This may be influenced by what a Commerce Department Officer described as "a Japanese philosophy that the cost of entering a market is to lose money for ten years". On a comparative basis, individuals within the U.S. Department of Commerce estimate that American construction firms receive profits of around one percent of sales, while foreign-owned contractors in the U.S. are losing money in the order of two percent of sales.

19) Businesses in the United States and Canada operate with similar payment terms.

General contractors typically receive progress payments, with a lump-sum upon project completion, while subcontractors get paid when the general contractor is paid. Payment is made within a 45-60 day period. One practice described as common in the U.S. twenty years ago was that of overloading cost items early in a project, such that the contractor's receipts exceeded outlays thereby allowing the firm to work and earn interest "using the developer's money". In recent years, developers have operated more tightly and contractors typically do not front-end-load anymore.

20) Canadian firms reported relatively few difficulties in the area of obtaining temporary entry and working status.

While this is true in a general sense, some Canadian executives and engineers have occasionally encountered difficulties in entering the U.S. for business purposes. The Free Trade Agreement eases entry restrictions. Under the FTA, four categories of business visitors will find it easier to cross the border. Business visitors may enter to conduct commercial activities, through applying at any entry point (B-1 Status, no fee). Professionals (engineers, architects) may enter at any entry point, provided appropriate educational, licensing, and employment requirements are met (TC-1 Status, $50 fee). Traders and investors must apply for a non-immigrant visa before leaving and must meet the appropriate rank and ownership requirements (E Visa, $40 fee). The forth category, intra-company transferees, must have a petition completed by the U.S. employer and meet the

length of employment requirement before entering (L-1 Status, $35 fee). Canadian Consulate officials can provide further details and definitions associated with the entry requirements.

21) Disadvantaged business and equal opportunity laws apply to public construction projects. A major construction-related difference between Canada and the United States, according to a firm active with government agencies in the U.S., is the often complex and onerous requirements of the disadvantaged business and equal opportunity laws which exist in the United States for government funded projects.

These requirements may stipulate that 25 percent or more of particular public projects must be subcontracted to designated companies controlled by minorities. For example, the Community Redevelopment Agency in California requires that 30 percent of an awarded project must be directed (by the General Contractor and occasionally by A-E firms as well) toward minority-owned businesses, while a recent Los Angeles sewage project had 14 percent minority and three percent female requirements. Despite a recent ruling striking down the constitutionality of these requirements, it is felt that most governments will march to their own drum and continue to award contracts with these requirements. Americans are willing to talk openly regarding these barriers and requirements - Canadian firms should discuss these matters as early in the project as possible.

Various interviewees argued that these requirements force them to both, contract with unqualified and undercapitalized parties, and increase the payroll by at least one person simply to administer the associated paperwork. Thus, the common perception of the non-bureaucratic United States and the socialized and bureaucratic Canada may be somewhat misleading in this respect. In active economic times, the limited number of qualified firms may be heavily booked and reaching goals may thus be a challenge.

22) The productivity and skill of American firms is on an approximate par with Canadian firms. With the exception of financial backing and local know-how, Canadian firms are felt to be very competitive with their American counterparts. For this reason, it was suggested that large contractors willing to spend time and dollars would succeed in the U.S. market because of its size and opportunity.

23) Many contractors described the "old boy network" as a major factor behind succeeding in the United States market, particularly in the more established northeastern and Florida markets.
As described by one executive, working the old boy network is "not an all-powerful requirement but one which places local players in better shape than someone who blew into town yesterday". Local firms tend to get bonding cheaper, haggle with suppliers better, get along with labour more smoothly, receive the union's better workers, and iron out code-related issues with inspectors more easily.

Penetrating the United States Construction Market

Appendices

LIST OF APPENDICES

APPENDIX A: PROMINENT COMPETITORS

APPENDIX B: CONSTRUCTION TRADE SHOWS

APPENDIX C: MAGAZINES, STUDIES AND OTHER SOURCES

APPENDIX D: CONSTRUCTION INDUSTRY ORGANIZATIONS

APPENDIX E: CANADIAN GOVERNMENT ASSISTANCE

APPENDIX F: FOREIGN DIRECT INVESTMENT IN THE INDUSTRY

APPENDIX G: GOVERNMENT PROCUREMENT

APPENDIX H: WEEKLY WAGES BY TRADE AND REGION

APPENDIX J: INDUSTRIAL CONSTRUCTION COSTS BY REGION

APPENDIX K: TAX RATES BY STATE

APPENDIX A: PROMINENT COMPETITORS

Table A-1: The Top 45 Contractors in the United States
(source: ENR Magazine, May 1989)

Rank	Firm	1988 contracts (in $ million) Total	Foreign	Construction specialty Bldg.	Util.	Petr.	Air-port	Hwy./ bridge	Pro-cess	Marine	Haz./ Waste	Oil as risk % of total
1	Fluor Daniel Inc., Irvine, Calif.*	12,169.4	1,819.1	•	•	•	•	•	•	•	•	35
2	Bechtel Group Inc., San Francisco, Calif.*	10,877.0	5,034.5	•	•	•	•	•	•	•	•	43
3	The M.W. Kellogg Co., Houston, Texas*	9,303.9	4,621.4	•	•	–	–	•	•	•	•	30
4	The Parsons Corp., Pasadena, Calif.*	6,177.6	3,075.0	•	•	•	•	•	•	•	•	84
5	Lummus Crest Inc., Bloomfield, N.J.*	5,430.0	4,200.0	•	•	•	–	–	•	•	•	70
6	Rust International Corp., Birmingham, Ala.*	5,170.0	50.0	•	•	•	–	–	•	•	•	8
7	CRSS, Houston, Texas	3,875.0	75.0	•	•	•	•	•	•	•	•	79
8	Morrison Knudsen Corp., Boise, Idaho*	3,794.0	5.0	•	•	•	•	•	•	•	•	64
9	Turner Construction Co., New York, N.Y.*	3,668.1	85.2	•	•	–	•	–	–	–	–	0
10	Foster Wheeler Corp., Clinton, N.J.*	3,079.0	2,739.0	•	•	•	•	–	•	–	•	15
11	Ebasco Services Inc., New York, N.Y.*	2,202.1	.0	•	–	•	•	•	•	•	•	40
12	Jones Group Inc., Charlotte, N.C.*	2,115.7	98.3	•	•	•	•	•	•	•	•	8
13	Brown & Root Inc., Houston, Texas*	2,031.0	441.6	•	•	•	•	•	•	•	•	3
14	Jacobs Engineering Group Inc., Pasadena, Calif.*	1,818.0	60.0	•	•	–	•	–	•	–	•	20
15	Centex General Construction Cos., Dallas, Texas*	1,750.0	.0	•	–	–	•	–	–	–	–	0
16	ICF-Kaiser Engineers Group Inc., Fairfax, Va.*	1,724.0	6.7	•	•	•	–	•	•	•	•	93
17	Stone & Webster Engineering Corp., Boston, Mass.	1,527.9	410.5	•	•	•	•	•	•	•	•	40
18	Kiewit Construction Group Inc., Omaha, Neb.*	1,385.1	211.8	•	•	•	•	•	•	•	•	0
19	BE&K Inc., Birmingham, Ala.	1,325.0	25.0	•	•	•	–	–	•	–	•	0
20	The Austin Co., Cleveland, Ohio*	1,319.9	250.9	•	•	•	•	–	•	–	–	0
21	Fletcher Construction (U.S.A.) Ltd., Honolulu, Hawaii*	1,166.6	.0	•	•	•	•	•	•	•	–	0
22	Guy F. Atkinson Co., South San Francisco, Calif.*	1,163.4	573.4	•	•	•	•	•	•	•	•	0
23	Gilbane Building Co., Providence, R.I.*	1,148.7	.0	•	•	–	•	–	–	–	–	65
24	The Clark Construction Group Inc., Bethesda, Md.*	1,134.2	.0	•	•	•	•	–	–	–	–	0
25	United Engineers & Constructors Intl. Inc., Philadelphia, Pa.*	1,047.0	6.0	•	•	•	–	–	•	–	•	0
26	Perini Corp., Framingham, Mass.*	1,007.1	108.8	•	•	•	•	•	–	–	•	2
27	McDevitt & Street Co., Charlotte, N.C.	987.4	.0	•	•	–	•	–	–	–	–	0
28	HCB Contractors, Dallas, Texas	987.0	.0	•	•	–	–	–	–	–	–	1
29	Huber, Hunt and Nichols Inc., Indianapolis, Ind.	905.0	.0	•	•	–	•	–	–	–	–	64
30	Schal Associates Inc., Chicago, Ill.*	900.0	536.0	•	•	–	•	–	–	–	–	98
31	Becon Construction Co. Inc., Houston, Texas*	871.0	4.0	•	•	•	–	•	•	•	•	5
32	McCarthy, St. Louis, Mo.	847.8	.0	•	•	–	•	•	–	–	–	40
33	CBI Industries Inc., Oak Brook, Ill.*	740.0	255.0	–	•	•	•	–	•	•	•	0
34	McDermott International, New Orleans, La.*	720.3	303.5	–	–	•	–	–	•	•	–	0
35	Burns and Roe Enterprises Inc., Oradell, N.J.	706.4	144.9	–	•	•	–	–	•	–	–	24
36	Herbert International Inc., Birmingham, Ala.*	700.0	170.0	•	•	•	•	•	•	•	–	0
37	Barnard and Burk Group Inc., Baton Rouge, La.*	670.0	20.0	•	•	•	–	•	•	•	•	12
38	C.L. Peck/Jones Brothers Const. Corp., Los Angeles, Calif.*	648.9	.0	•	•	–	•	–	–	–	–	30
39	Dillingham Construction Corp., Pleasanton, Calif.*	645.6	73.3	•	•	•	•	•	•	•	•	0
40	Dick Corp., Pittsburgh, Pa.*	620.4	.0	•	•	•	•	•	•	•	•	1
41	Austin Industries, Dallas, Texas*	603.4	.0	•	•	•	•	•	•	•	–	26
42	Fru-Con Construction Corp., Bellevue, Wa.	586.0	.0	•	•	•	•	•	•	–	•	0
43	H.B. Zachry Co., San Antonio, Texas*	574.2	61.5	•	•	•	•	•	•	–	–	0
44	George A. Fuller Co., New York, N.Y.	544.9	51.0	•	•	–	•	•	–	•	•	47
45	L.F. Driscoll Co., Bala Cynwyd, Pa.	531.7	.0	•	–	–	–	–	–	–	–	100

APPENDIX A: PROMINENT COMPETITORS

As discussed in Section Two, domestically-controlled firms conduct over 96 percent of all construction work in the United States. There are some 1.4 million contractors in the country, of which around one million are small, individually-owned proprietorships and around four thousand conduct more than $US 10 million each in annual business. The U.S. industry is very fragmented, with no company controlling more than two percent of market volume. Relative to European and Japanese markets, the U.S. market offers lower profitability (around one percent of revenue versus 2-4 percent in Europe and Japan) for contractors because of the fragmented market. The European markets are much more concentrated, with perhaps a half-dozen contractors dominating the scene, while the Japanese market is still relatively closed to foreigners. However, according to a recent MIT study, American contractors do earn good returns-on-investment, a fact which makes acquisition of U.S. firms an attractive proposition.

This appendix describes the leading general and specialized construction firms in the U.S., and includes information on firm size, type of work performed, and profitability. The companies profiled are typically non-residential builders.

Table A-1 lists the largest construction companies in the United States, as ranked by *ENR Magazine*. The figures include all revenues from prime contracts, shares of joint ventures, subcontracts, design-construct contracts, and construction management "at risk" (where manager assumes financial liabilities and risks similar to those of a general contractor) contracts. There are 26 firms reporting greater than $US 1 billion in 1988 contracts. The 400 largest contractors had average domestic business of $US 320 million and average foreign contracts totalling $US 65 million in 1988.

Table A-2 provides information from the *Forbes 1989 Annual Directory*. This directory lists 1988 sales, sales growth, return on equity and debt-equity ratios for a number of leading construction firms. This information is for the firm as a whole, and in many instances includes revenue from non-construction activity - it is likely not as accurate as that in the construction-oriented *ENR Magazine*. Table A-2 indicates that the average American commercial firm has grown at an annual rate of 6.3 percent during the past five years, has had a return-on-equity (ROE) of 2.5 percent over

Table A-2: Prominent Construction Companies in the United States

Company	1988 Sales	Growth	Income/ Equity (%)	1988 Debt/ Equity (%)
	$US mil	5yr.avg	5yr.avg	
Guy Atkinson	926	-3.6	7.7	17
Blount	1,385	11.4	12.4	111
Butler Manufacturing	633	10.3	2.0	24
CBI Industries	1,335	12.4	def	75
Centex	1,627	8.5	13.2	37
Comstock Group	413	15.0	def	310
Dover	1,885	9.9	17.3	3
Ensearch	2,768	-6.4	2.4	100
Fischbach	976	-2.0	def	33
Fluor	4,740	-9.7	def	25
Foster Wheeler	1,077	-5.8	7.3	42
Halliburton	4,463	-14.1	0.6	10
Henley Group	2,788	31.0	na	12
Jacobs Engineering	757	-0.9	def	28
LVI Group	488	99.7	na	241
MMR Holding	556	45.2	na	25
Morrison Knudsen	1,972	-3.5	6.5	34
Perini	870	-4.5	2.5	36
Trinity Industries	745	6.3	2.1	95
Turner	3,133	7.3	10.6	138
Median - Commercial	*na*	*6.3*	*2.5*	*35*

Source: Forbes 1989 Annual Report on American Industry
Note: "na" denotes that less than four year's worth of data are available. "def" denotes a deficit.

this period[1], and a 1988 debt-to-equity ratio of 35 percent. According to Forbes, the commercial construction industry has low profitability when compared to U.S. industry as a whole - for example, its ROE figure is only one-fifth that for all American industry.

In entering the American market, Canadian firms may also encounter some leading foreign contractors. While foreign contractors currently capture only four percent of the market, this share is expected to increase. According to *ENR Magazine*, the ten largest foreign contractors captured $US 8.3 billion worth of business in the U.S. in 1988. These firms are Holzmann (Germany), Bovis (England), Fletcher (New Zealand), SAE (France), Aoki (Japan), Davy (England), Bilfinger Berger (Germany), PCL (Canada), Kajima (Japan) and John Brown (England). Most firms capture this business through U.S. acquisitions - for example, Fletcher made three American acquistions during 1988.

The following paragraphs discuss some of the dominant firms in more detail:

Guy Atkinson

Based in San Francisco, Atkinson has sales over $US 900 million. The company employs around 8,100 people, including those in its subsidiaries, Walsh Construction and Bingham Willamette. In addition to heavy construction, Atkinson is active in oil and gas operations and industrial pipe manufacturing. Approximately $US 700 million of its total revenue is from construction, largely of dams, roads, tunnels and other public projects. It appears that Atkinson is more profitable in other industries - for example, while 77 percent of its revenue accrues from construction, only 18 percent of its profits are derived through construction activities.

Blount

Based in Montgomery, Alabama, Blount manufactures speciality steel and machinery in addition to its construction activities. Some $460 million, or one-third of its total sales are derived through its Construction Division. According to *Forbes*, the firm lost money on its construction operations in 1988. Omark Canada is a Guelph-based Canadian subsidiary of Blount.

[1]Residential construction firms, with a five-year ROE of almost 16 percent, are far more profitable than commercial firms

Butler Manufacturing

Based in Kansas City, Butler is active in manufacturing pre-engineered metal and wood buildings in addition to its general contracting work. Its 1988 sales totaled around $US 630 million. Over 90 percent of its 1988 revenues and profits stem from its construction activities. The firm has an operation in Burlington, Ontario which manufactures pre-engineered buildings.

CBI Industries

Based in Oak Brook, Illinois, CBI is a large holding company active in transportation as well as metal plate construction. According to *Forbes*, one-half of its 1988 revenues of $US 1.3 billion were from construction, although these operations were not profitable in 1988.

Comstock Group

Based in Connecticut, Comstock employs around 3,000 people in its electrical and mechanical contracting and construction of mass transit, highways, nuclear and waste facilities. Its engineering subsidiary has $US 53 million in sales, about fifteen percent of the firm's total sales. The remainder of the firm's revenue stems from construction activities.

Centex

Based in Dallas, Centex is active in residential and general construction and manufacturing of cement. About one-half of its 1988 revenues of $US 1.6 billion were from construction, although this segment appears to contribute only one-fifth of the firm's total profits.

Dover Corp

Dover is based in New York City. The bulk of its activity is in manufacturing of pumps, controls, circuitry and other related items. In 1988, about one-third of its revenues and profits were from its construction projects.

Ensearch Corp

The large size of Dallas-based Ensearch stems primarily from its involvement in petroleum exploration, gas transmission and oilfield services in addition to its engineering and construction activity. Construction provided approximately one-third of its total 1988 revenues of $US 2.8 billion. The segment was not profitable in 1988.

Fischbach Corp

Based in New York City, Fischbach, with $US 1 billion in sales, is the largest electrical and mechanical contractor in the United States. Virtually all of its revenues are derived from construction. Fischbach is currently engaged in an ownership battle between Victor Posner, who bought it in 1985, and six directors who have filed a lawsuit against him. The Securities Exchange Commission is also currently investigating the matter. The company has struggled during the past several years, although its loss figure of $US 14 million in 1988 represented an improvement from the $US 36 million and $US 16 million losses of the two previous years.

Fluor Daniel

Based in Irving, California, Fluor is active in engineering and construction as well as in managing the exploration and production of various minerals. Around 90 percent of its revenues and profits stem from construction - indeed, Fluor is one of the few firms, according to Forbes, which reported higher profits on construction than on non-construction activities in 1988. The firm has operations worldwide including Canada (Calgary), Saudi Arabia, Australia and the United Kingdom. Fluor is active in industrial construction - for example, the firm has increased its petrochemical construction work five-fold over the past two years.

Foster Wheeler

A large manufacturing firm based in New Jersey, Foster Wheeler is active in manufacturing chemical and industrial equipment in addition to the activities of its engineering and construction group. Its 1988 sales totaled $US 1.1 billion. Approximately one-half of the firm's revenues are from its construction group, although this group lost money in 1988, according to *Forbes* review.

Halliburton

Based in Dallas, Halliburton is a large producer and servicer of drilling equipment, oilfield equipment and pulp and paper mill equipment in addition to its engineering and construction activities. Based on 1988 data, it appears that some 45 percent and 60 percent of the firm's revenues and profits, respectively, stem from its construction operations.

Henley Group

Based in La Jolla, California, the Henley Group is a dominant firm in providing engineering, architectural and surveying services in addition to supplying industrial machinery and equipment. Approximately one-half and one-third of the company's 1988 sales and profits, respectively, stemmed from construction activities.

Jacobs Engineering

Based in Pasadena, California, Jacobs is an $US 800 million engineering and construction firm with around 2600 employees. Four-fifths of its revenues are in the construction segment.

LVI Group

Based in New York City, LVI specializes in interior construction and asbestos abatement while also producing certain types of equipment. Construction accounted for over 90 percent of the firm's total revenues and profits in 1988.

MMR Holding

Based in Baton Rouge, Louisiana, MMR is a large electrical and specialty trades contractor with 350 full-time and 2,500 part-time employees. Construction accounted for over 90 percent of the firm's total revenues and profits in 1988.

Morrison Knudsen

Based in Boise, Idaho, Morrison Knudsen is a large construction and engineering firm, employing almost 20,000 in its operations, which also include shipbuilding and real estate development. It appears that the real estate operations are more profitable than construction - for example, although construction contributed ninety percent of 1988 revenues, it provided only six percent of profits. The firm has a long history in civil projects, having been one of the principal contractors on the Hoover and Grand Coulee dam projects, and it is currently expanding its civil business in water tunnels, airports, prisons, and mass transit projects.

Perini

Perini, in Framington, Massachusetts, is a $US 900 million construction, real estate, and coal mining company. The latter operations are more profitable than construction - for example, although construction contributed over 90 percent of 1988 revenues, it provided only five percent

of profits. Perini owns some 75 percent of Majestic, an Edmonton-based pipeline construction company, which in turn owns 45 percent of the Monenco engineering firm.

Trinity

Based in Dallas, Trinity manufactures rail cars, pressure vessels and marine products in addition to its construction activities. Construction contributes around one-quarter of the firm's revenues and profits.

Turner Corp

Based in Illinois, Turner is a $US 3 billion company. The construction arm builds commercial, government, and residential projects, as well as being involved in real estate development and building operation.

APPENDIX B: CONSTRUCTION TRADE SHOWS

APPENDIX B: CONSTRUCTION TRADE SHOWS

Many firms are taking advantage of trade shows, an activity which ranks among the most important of all marketing vehicles, particularly in the United States. A trade show provides sellers with the opportunity to exhibit products or services, to meet with top buyers in the industry, and to investigate the competition. Trade show are fast-paced - typically a trade show lasts 2-3 days, during which the sales representative attempts to meet as many buyers as possible, while often in the midst of direct competition.

Following is a partial list of trade shows related to the construction sector. The listed individuals and organizations should be able to provide the most topical information on upcoming shows. Appendix D provides a listing of associations, and interested firms may wish to contact these associations to find out more topical information on other relevant upcoming trade shows.

Generally, these trade shows are offered on an annual basis, usually during the autumn season The shows are categorized into those pertaining to equipment, nonresidential construction, renovation, and specialized shows. External Affairs and International Trade Canada (as discussed in Appendix E) are very active in the trade show area, sponsoring Canadian pavilions at hundreds of trade shows each year - Department officials could also be contacted by firms in search of more topical information on upcoming shows.

EQUIPMENT AND MATERIALS

Name:	***ACI Convention***
Sponsor:	American Concrete Institute
Product:	concrete-related
Date/Location:	March 18, 1990 in Toronto November 11, 1990 in Philadelphia
Contact:	Ann K. Bruttell, ACI in Detroit, (313) 532-2600

Name:	***Building Products Expo***
Sponsor:	Key Productions
Date/Location:	usually in October
Contact:	Chalisse Hunter, Key Productions in Hartford, (203) 247-8363

Name:	***Construction Contractors Equipment Exposition***
Sponsor:	Dwyer Exhibitions
Product:	heavy construction equipment, products and services
Date/Location:	usually in December
Contact:	Martin Dwyer, Dwyer Exhibitions in Chicago, (312) 467-4590

Name:	***International Concrete and Aggregates Show***
Sponsor:	Sand&Gravel Assoc, Ready Mixed Concrete Assoc, Stone Assoc.
Product:	gravel, stone, concrete related
Date/Location:	January 28, 1990 in Las Vegas
Contact:	Jim Deters in Louisville, KY, (502) 695-1535

Name:	***World of Concrete***
Sponsor:	American Society for Concrete Construction (ASCC)
Product:	concrete equipment, products and services
Date/Location:	usually in February
Contact:	Daniel J. Sladek, ASCC in Addison, Ill, (312) 543-0460

Name:	***CSI Construction Products Trade Show***
Sponsor:	CSI
Date/Location:	usually in May
Contact:	Jacqueline Haughton in Wheat Ridge, Co, (303) 422-3444

Name:	***Construction Contractors Equipment Expo***
Date/Location:	usually in December
Contact:	Martin Dwyer in Chicago (312) 467-4590

Name:	***National Precast Concrete Association***
Date/Location:	usually in March
Contact:	Robert Walton in Indianapolis, (317) 253-0486

Name:	***Prestressed Concrete Institute***
Date/Location:	usually in October
Contact:	Thomas Battles in Chicago, (312) 786-0300

NONRESIDENTIAL SHOWS

Name:	***American Road Transportation Builders Association (ARTBA)***
Date/Location:	usually in November
Contact:	Robert Hinton at ARTBA in Washington, (202) 488-2722

Name:	***National Asphalt Pavement Association***
Date/Location:	usually in January
Contact:	R. Jensen in Riverdale, Md, (301) 779-4580

Name:	***Construction Specifications Institute***
Sponsor:	CSI
Product:	non-residential construction products and services
Date/Location:	June 29, 1990 in Chicago June 28, 1991 in San Diego
Contact:	John Atherton, CSI in Alexandria, Virginia, (703) 684-0465

Name:	***Council of Educational Facility Planners Conference***
Sponsor:	The Council
Product:	education facility related
Contact:	Karen Stevens, The Council in Columbus, Ohio, (614) 422-1521

Name:	***National Commercial Building Exposition and Conference***
Sponsor:	Buildings Magazine
Product:	commercial building
Date/Location:	October 17, 1990 in Chicago October 23, 1991 in Atlanta
Contact:	Marvin Park, Marvin Park Assoc in Park Ridge, Ill, (312) 823-2151
Name:	***Office Building Show***
Sponsor:	Building Owners and Managers Association (BOMA)
Product:	office building products and services
Date/Location:	usually in June
Contact:	Charles T. Glazer, BOMA in Washington, 202 289-7000
Name:	***The AGC/Constructor Annual Exposition***
Sponsor:	Associated General Contractors
Product:	construction-related equipment, software, materials and services
Date/Location:	usually in March
Contact:	Cynthia Holt, AGC, Washington, (202) 393-2040
Name:	***American Resort/Residential Development Association***
Sponsor:	Dobson and Assoc
Product:	products and services for resort and vacation related projects
Date/Location:	usually in April
Contact:	Dan Dobson, Dobson and Assoc in Washington, (202) 775-3606
Name:	***CMC Computers/Management for Contractors/Engineers***
Sponsor:	Engineering News-Record
Product:	hardware and software for the construction industry
Contact:	Irene Nelson, Fleishman&Linden's in Palatine, Ill, (312) 397-7818
Name:	***Eastcon***
Sponsor:	AGC and two other organizations
Product:	construction equipment, components, products and services
Date/Location:	November 7, 1991 in Tampa
Contact:	William Campbell, Charlotte, (704) 376-6594 or (800) 334-0248
Name:	***Builders Contractors Assoc***
Date/Location:	usually in March
Contact:	Joan Dickson in Washington, (202) 637-8800
Name:	***Systems Builders Association***
Date/Location:	usually in March
Contact:	Christopher Long in West Milton, OH, (513) 698-4127
Name:	***National Association of Industrial and Office Parks***
Date/Location:	usually in October
Contact:	NAIOP in Virginia, (703) 979-3400

RENOVATION SHOWS

Name:	***International Remodelling Contractors Association Expo***
Sponsor:	International Remodelling Contractors Association
Product:	building and remodelling products
Date/Location:	usually in February
Contact:	Daniel Miller, McGrath and Assoc in Atlantic City, (800) 257-8626

Name:	***National Association of Remodeling Industry***
Date/Location:	usually in March
Contact:	James Tolliver in Arlington, VA, (703) 276-7600

SPECIALIZED SHOWS

Name:	***Wall and Ceiling Industry Convention and Expo***
Sponsor:	Association of the Wall and Ceiling Industries International
Product:	wall and ceiling related
Date/Location:	March, 1990 in Orlando
Contact:	Cam Baker or Kevin Morules, Washington, (202) 783-2925

Name:	***Mechanical Contractors Association of America***
Date/Location:	usually in February
Contact:	Cynthia Buffington in Bethesda, Md, (301) 897-0770

Name:	***National Association of Elevator Contractors***
Date/Location:	usually in October
Contact:	U. Parks in Atlanta, (404) 261-0166

Name:	***Insulation Contractors Association of America***
Date/Location:	usually in September
Contact:	Hartley Edes in Rockville, Md, (301) 926-3083

Name:	***Scaffold Industry Association***
Date/Location:	usually in June
Contact:	Victor Saleeby in Van Nuys, CA, (818) 782-2012

Name:	***American Congress Surveying Mapping Annual Meeting***
Sponsor:	The Congress
Product:	surveying and mapping related
Date/Location:	usually in March
Contact:	Richard Dorman, Congress in Falls Church, Va (703) 241-2446

Name:	***International Fence Industry Association***
Date/Location:	usually in January
Contact:	Kay Knapp in Austin, Tx, (512) 339-8376

Name:	***National Asbestos Council***
Date/Location:	usually in September
Contact:	Paul Skoglund in Decatur, GA, (404) 292-3802

Name:	***National Association of Home Builders***
Sponsor:	NAHB
Product:	building and construction products and services
Date/Location:	usually in January
Contact:	Ignacio Cabrera, NAHB in Washington, (202) 822-0424 or 800 (368-5242)

Name:	***Deep Foundation Institute***
Date/Location:	usually in October
Contact:	Robert Compton in Sparta, NJ, (201) 729-9679

APPENDIX C: MAGAZINES, STUDIES AND OTHER SOURCES

APPENDIX C: MAGAZINES, STUDIES AND OTHER SOURCES

There are a number of sources[1] which provide useful information on the U.S. construction market. The most important U.S. construction publications are described below:

FW Dodge - Construction Market Forecasting Service

Provides five-year forecasts of construction markets grouped into 22 segments. All groupings are presented at the national and nine-region level. Data is also available, at additional cost, for the top fifty metropolitan areas covering office, retail, warehouse, hotel and housing structures. The basic annual subscription providing quarterly publications costs approximately $US 12,000. Contact Eileen Anderson at (212) 512-3711 for further information.

United States Industrial Outlook

The Outlook is produced annually by the International Trade Administration of the U.S. Department of Commerce. It is a large book which reviews the recent scene, long-term outlook, trends, and characteristics for some seventy industries, including construction.

Building Permits Branch of the US Census Bureau

Contact Brenda Yates at (301) 763-7244 for reports and information on building permits and construction activity levels.

Construction Review Magazine

Provides historical, outlook, and other construction information on a bi-monthly basis. Some of the information is available on a state basis. The magazine also summarizes some FW Dodge information. Contact Charles Pitcher (202) 377-0132, the editor of the magazine, at the Building Materials and Construction Division of the International Trade Administration of the Department of Commerce.

Value of New Construction Put In Place

This division of the Census Bureau provides monthly information on the value of construction nationally. Private construction is segmented into twelve structure types, while Public construction is segmented into eleven structure types. This comprehensive national information is available from Vicki Garrett at (301) 763-5717 at the Census Bureau.

---

[1] An exhaustive listing of relevant journals was provided and arranged into 32 construction and material categories in the January/February, 1989 issue of Construction Review magazine. Call (202) 377-0132.

State and Local Government Procurement Information

The documents Government Finances and State Government Finances provide comprehensive information on sewerage, highway, and education capital outlays by state governments and local governments. The latter are divided into county, municipal, township, school district, and special district governments. This information is available from Henry Wulf (301) 763-7664 of the Governments Division of the Census Bureau.

Trade Show and Convention Guide

This annual publication lists and provides information on U.S., Canadian and international trade shows by industry. The guide is available for $US 75 from Billboard Publications in Nashville (615) 321-4250.

Industrial and Office Vacancy Rates

The industrial information charts quarterly the vacancy rate for rolling four-year periods for 32 major U.S. cities. The office information charts the rates in downtown and suburban regions for 52 U.S. cities and regions. The information is produced by Coldwell Banker. Contact Theresa Garrison at (703) 734-4700.

Current Construction Projects

Coldwell Banker also produces a semi-annual document discussing rents, lease rates, tenant profiles, absorption and projects under construction in 57 markets across the United States. Individual market reports, discussing local office and industrial markets in a detailed manner, are also available from Coldwell Banker - Canadian contractors who have identified particular regions of interest to them may be wise to obtain the relevant reports. Information on these office and industrial documents may be obtained from Jeff Torto at (617) 742-5744.

ENR Magazine (formerly Engineering News - Record)

ENR is a weekly publication of McGraw-Hill. It reviews activities, trends, forecasts, companies, and issues which are topical in the U.S. construction industry. ENR also produces annual issues on the Construction Forecast, the Top 400 Contractors, the Top 250 Specialty Contractors, and the Top 250 International Contractors. Each weekly issue contains information on specific projects by state and specific proposals by city. ENR is described by industry insiders as the best source of construction information in the country. Further information and subscriptions may be obtained

from Shirley Kiss, ENR, PO Box 423, Hightstown, NJ, 08520 at telephone (609) 426-5129. Subscriptions cost $US 49 annually or $US 94 for three years.

Construction Cost Information - R.S. Means Company

The research firm, R.S. Means, monitors the U.S. construction industry on an ongoing basis and publishes construction cost information dealing with foundations, framing, roofing, mechanical, electrical, overhead, profit and various other aspects of the construction of residential, commercial, repair and remodeling, and industrial structures. These documents can be purchased for around $US 50 each, through calling (508) 747-1270.

Site Selection Magazine

Site Selection is published every two months by Conway Data of Atlanta. Annual subscriptions are $US 75 within the United States and $US 87 for foreign addresses. The magazine discusses real estate and site-related considerations and covers a wide variety of issues relevant to the U.S. construction industry. The April, 1989 issue, for example, provides information on private and public development organizations in several thousand communities and covering all regions of the United States. Site Selection Magazine can be obtained by writing Conway Data, Site Selection, 40 Technology Park/Atlanta, Norcross, Georgia, 30092, or through telephoning 404-446-6996.

Blue Book of Building and Construction

Contractors Register Inc. of Jefferson Valley, New York, 10535 publishes seven Regional Editions of the Blue Book listing companies in 1) New York and northern New Jersey; 2) East Pennsylvania, southern New Jersey and Delaware; 3) D.C., Maryland and northern Virginia; 4) Florida; 5) southern California; 6) Chicago and Milwaukee; and 7) New England. These are distributed to thousands of contractors, A&E's, manufacturers, governments and institutions. Contact (800) 431-2584 for further information.

Constructor Magazine

This sixty-odd page magazine is produced monthly by the Associated General Contractors and described as "the Management Magazine for the Construction Industry". It deals with labour issues, new products, legislative matters, environmental considerations, marketing, and various other matters of interest to construction managers. An annual subscription costs $US 35 and can be obtained through calling (202) 393-2040.

American Business Lists Inc.

This Omaha, Nebraska firm (telephone 402-331-7169, cost of $US 2) compiles a listing of fourteen million American businesses from yellow page listings and provides the number of companies by state and industry. For example, there are 107 sub-sectors under the heading "construction. The list would indicate, by way of an obscure example, how many "tennis court construction firms" there are in Tennessee.

Metro Magazine

Published by Bobit Publishing (2512 Artesia Boulevard, Redondo Beach, California, 90278) seven times yearly this magazine reviews issues, products, people, trends and other matters of relevance to the U.S. mass transit market.

AGC Publications and Services Catalogue

Published by the Associated General Contractors, this catalogue lists a wide range of documents and services available from the Association, including training programs, bidding instructions, and safety regulations. The Associated General Contractors (202-393-2040) distributes this document free of charge.

Regional Magazines

There are numerous regionally-oriented magazines which would be of value to firms entering the particular area. For example, *New England Construction*, published twice monthly by the Northeast Publishing Company, documents coming events, major New England projects and the firms and amounts bid, industry news, people and promotions, etc covering the states of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island and Connecticut. Annual subscriptions are $US 45 and available at New England Construction, 26 Long Hill Road, PO Box 362, Guilford, Connecticut, 06437. The telephone number is (203) 453-3717. The *Daily Construction Service*, published daily by Wade Publishing of San Francisco (415) 589-1010 provides information on low bids received, construction plans, sub-bids, equipment sales, and contracts pending for the California region, and costs $US 540 annually. Important journals in other regions should become evident as the firm explores the area in question.

APPENDIX D: CONSTRUCTION INDUSTRY ORGANIZATIONS

APPENDIX D: CONSTRUCTION INDUSTRY ORGANIZATIONS

According to the 1988 Encyclopedia of Associations, produced by Gale Research[1], there are 182 construction associations[2] and committees active in the United States. These cover all facets of construction trades and specializations. There are also other entities which provide valuable services to the industry. The leading organizations are described below:

Associated General Contractors of America, Washington; (202) 393-2040.
With 33,000 members, 108 local chapters and 65 committees, this association is the largest construction association. Its members are divided approximately sixty percent non-union and forty percent union. It provides tax and training services, seminars, statistics, and other services to all types of construction firms, including general contractors, subcontractors, industry suppliers, and service firms. The association's services are divided into building, heavy industrial, utility, highway, international, tax, insurance, safety, education, and manpower groups. The AGC represents 5000 building contractors, 4000 highway contractors, 4500 heavy industrial contractors, 2000 municipal/utility builders, among other organizations. Membership fees are generally quite expensive and are based upon annual sales volume. A firm with $US 50 million in annual fees would pay approximately $US 20,000 in membership dues for local and national representation, including a fixed minimum fee of $US 750, while a firm with $US 30 million in annual revenue would pay about $US 14,000 annually.

American Subcontractors Association, Virginia; (703) 684-3450
This organization has 6000 members and 54 local groups, and provides government liaison, legal, payment, and statistical services to its members. Members cover a range of specialties such as foundation, concrete, masonry, mechanical, electrical, painting, acoustics and roofing.

National Association of Industrial and Office Parks, Virginia; (703) 979-3400
The NAIOP is a non-profit organization representing 7000 professionals involved in developing, designing, constructing, financing and managing industrial and office park properties. Annual membership fees are in the $US 460-500 range, while affiliate fees are $US 250-300.

---

[1]Information or copies may be obtained from: Encyclopedia of Associations, Gale Research Company, Book Tower, Detroit, MI, 48226; (313) 961-2242 or (800) 521-0707.
[2]The September/October 1987 issue of Construction Review lists approximately 1000 trade associations, professional societies and labour unions of the construction and materials industries. Contact Charles Pitcher at (202) 377-0132 for further information.

National Electrical Contractors Association, Maryland; (301) 657-3110
The organization has 5000 members encompassing the erecting, repairing, servicing, and wiring of electrical installations. It provides management services, labour relations programs, seminars, and other services through its eighty staff members.

National Remodelers Council, Washington; (202) 822-0212
The mandate of this organization is to provide organizational and technical advice, represent its members before business, consumers, and local governments, lobby for legislative changes, and sponsor programs. Its members are involved in the rehabilitation and remodeling of (mainly residential) properties.

Mechanical Contractors Association of America, Maryland; (301) 897-0770
This association serves 1700 members who install and service heating, cooling, and other systems. It provides training, seminars, and advisory services on a range of subjects.

Construction Financial Management Association, New Jersey; (201) 287-2777
This 1600 member association provides and coordinates meetings and seminars dealing with the financial management of the construction industry.

Construction Specifications Institute, Virginia; (703) 684-0300
This group deals with matters of design, specifications, maintenance, and documentation on behalf of its 18,000 members.

Coordinating Council for Computers in Construction, New York; (212) 512-3268
This council provides for the exchange of information on databases, hardware and software, and their applications in the construction industry. It has 7,000 members.

American Institute of Constructors, Ohio; (614) 464-0598
This group provides its 1600 members with a forum to exchange information and ideas to advance the practice of construction.

Cognetics; (617) 661-0300
Cognetics, based in Cambridge, Massachusetts, compiles a database of some eight million American companies, most of them unlisted and with minimal published information. Cognetics uses the data to estimate demand for commercial and industrial space by metropolitan sub-market,

forecast areas and further delineation by Cognetics allows detailed analysis for specific geographic regions. For example, the database range provides specific information for the one subarea in Flint or the thirty subareas in New York City. Headed by former MIT personnel, further information on the firm's services and costs may be obtained from Sara Dillon, 125 Cambridge Park Drive, Cambridge, Mass, 02140, or through telephoning (617) 661-0300.

Revay and Associates; (514) 932-2188

Based in Montreal and Hartford, this firm provides dispute resolution, tender preparation, cashflow scheduling, arbitration and other related services to construction-related organizations. The contact numbers for Stephen Revay, the President, are 514-932-2188 in Montreal and 203-651-4148 in Hartford.

Center for Construction Research and Education; (617) 253-7273

This center, part of MIT's Civil Engineering Department, produces various publications of an academic nature. An estimated 20 firms annually approach the Center to discuss construction technology, industry issues etc, and the Center is open to approaches from Canadian contractors. Fred Moavenzadeh and Charles Helliwell (617-253-7273 in Cambridge, Mass) are two excellent sources of construction-related information at the Center.

APPENDIX E: CANADIAN GOVERNMENT ASSISTANCE

APPENDIX E: CANADIAN GOVERNMENT ASSISTANCE

The federal Department of External Affairs and International Trade Canada has Trade Centres located in every region of Canada, as well as 27 trade offices/consulates in the U.S., to offer a comprehensive and integrated program of assistance to Canadian industry.

The consulates in the United States are staffed by Trade Commissioners and Commercial Officers who assist Canadian firms in winning export contracts in their region. These individuals generally have good knowledge of the local environment and are often of valuable assistance in penetrating the market and region in question. They are helpful in a variety of ways, including promoting Canadian companies to local customers, recommending appropriate technical experts to assist in negotiating a deal, selecting appropriate sales agents, assisting in the settlement of payments, and assisting in travel matters. Canadian trade office locations are indicated in Tables E-1 and E-2. Ask to speak to the Trade Commissioner or Commercial Counsellor.

The Department provides a trade development program which, both, introduces new exporters to the U.S. market, and supports experienced exporters by increasing their exposure to new regional markets using the NEXUS program (described below) as well as trade shows. The program plays a prominent role in the federal Government's strategy of ensuring that the Canadian business community is well positioned and well supported when accessing the U.S. market. Promotion of trade into the United States is managed by the U.S. Trade, Tourism and Investment Development Bureau.

Canadian companies can take advantage of any of the following trade development initiatives, sponsored by the Bureau:

Trade Shows

Trade shows are proven tools for companies to use in the U.S. market to introduce new products, establish representation, transact a considerable amount of business and obtain a very clear, concise picture of the competition.

In 1989, External Affairs and International Trade participated in over 400 major events in some 72 industrial sectors, as well as in smaller, regional trade shows. The Department will set up a Canadian pavilion and share related expenses with the Canadian companies

participating in the pavilion. In cooperation with the local Embassy, receptions are often organized to bring the participants and local buyers together for one-on-one discussions.

Missions

The Department sponsors various missions, such as an Incoming Buyers' Mission, whereby key decision-makers from the U.S. will be brought to a location in Canada to offer presentations and meet with Canadian companies. Similarly, outgoing missions to the U.S. are conducted in which Canadian companies are taken to a geographic location to meet prospective buyers.

Market Studies/Directories/Seminars

External Affairs and International Trade also publishes market studies, such as this one, on a sectoral basis. In addition, the Department sponsors seminars and workshops for industry groups on specific subjects.

New Exporters to Border States (NEBS)

A NEBS mission walks a group of approximately 25 small companies through the entire process of exporting. Documentation and customs clearance procedures are explained in Canada and at one of the northern border posts where further information is provided on banking, insurance, agents and distributors, and other aspects of export activity. Studies indicate that fifty percent of NEBS participants eventually make an export sale.

New Exporters to the United States (NEXUS)

NEXUS is a relatively new program for the numerous small to medium sized companies from every region of the country who have traditionally traded just over the Canada/U.S. border, as a logical extension of their operations. Under NEXUS, companies will be encouraged to venture into other U.S. regional markets by participating in outgoing, sectorally-based missions, usually to a post or a selected regional trade fair. There, participants receive a briefing on local opportunities from post trade officers who will organize an itinerary of meetings with manufacturers' agents, distributors and/or buyers.

Marketing Information and Assistance

The International Trade Development Branch is the Department's focal point for export promotion activities. The branch administers the following programs offered by the Department:

a) *Program for Export Market Development:* a cost-sharing assistance program that helps Canadian businesses participate in, or undertake various types of export promotion activities. The activities for which PEMD funding is available include: participation in trade fairs; visits outside Canada to identify markets; visits of foreign buyers to Canada; project bidding; establishment of permanent sales offices abroad; and formulating marketing agreements. Further information on this program is available from the International Trade Centre within the local office of Industry, Science and Technology Canada. These numbers are provided below.

b) *The World Information Network for Exports (WIN Exports):* a computerized directory of Canadian exporters designed to help trade development offices around the world respond more quickly to opportunities identified in their territory.

c) *Info Export Toll Free Number*: information and questions relating to any aspect of exporting may be directed to the toll free number (1-800-267-8376) for assistance.

The federal Department of Industry, Science and Technology Canada has established International Trade Centres across Canada to assist Canadian exporters. In addition to the Ottawa headquarters, the Centres are located in each province, as indicated in Table E-3. Provincial industry departments also offer expertise and programs to assist companies in penetrating export markets. Firms may wish to contact the offices listed in Table E-4 to obtain further information in this regard.

Table E-1: Canadian Consulates and Trade Offices in the United States

Location	*Telephone*	*Fax*	*Territory*
Washington D.C	(202) 682-1740	(202) 682-7795	DC, DE, MD, VA, East.PA
Atlanta	(404) 577-6810	(404) 524-5046	AL, FL, GA, MS, NC, SC, TN
Boston	(617) 262-3760	(617) 262-3415	ME, MA, NH, RI, VT, St.Pierre
Buffalo	(716) 852-1247	(716) 852-4340	west, central NY
Chicago	(312) 427-1031	(312) 922-0637	IL, MO, WI, IA
Cincinnati	(513) 762-7655	(513) 762-7802	satellite office
Cleveland	(216) 771-0150	(216) 771-1688	KY, OH, WV,west PA
Dallas	(214) 922-9806	(214) 922-9815	TX, AR, KS, LA, NM, OK
Dayton	(513) 255-4382	(513) 255-1821	satellite office
Denver	(303) 291-9611	(303) 291-9615	satellite office
Detroit	(313) 567-2340	(313) 567-2164	Toledo, MI, IN
El Segundo, CA	(213) 335-4439	(213) 335-4185	satellite office
Houston	(713) 627-7433	(713) 621-0193	satellite office
Los Angeles	(213) 687-7432	(213) 620-8827	AZ, south CA, NV
Miami	(305) 372-2352	(305) 374-6774	satellite office
Minneapolis	(612) 333-4641	(612) 332-4061	IA, NE, MN, MT, ND,SD
New York	(212) 768-2400	(212) 768-2440	CT, NJ, south NY, Bermuda
Orlando	(407) 841-7337	(407) 425-6408	satellite office
Philadelphia	(215) 697-1264	(215) 697-5299	satellite office
Pittsburgh	(412) 392-2308	(412) 392-2317	satellite office
Princeton	(609) 452-9027	(609) 452-8464	satellite office
San Diego	(619) 546-4467	(619) 457-2844	satellite office
San Juan	8-1-(809) 758-3500	8-1-(809) 250-0369	satellite office
San Francisco	(415) 495-6021	(415) 541-7708	north CA, CO, HI, NV, UT, WY
Santa Clara	(408) 988-8355	(408) 988-6315	satellite office
Seattle	(206) 443-1777	(206) 443-1782	AK, ID, OR, WA
St. Louis	(314) 862-0130	(314) 862-3129	satellite office

Source: Department of External Affairs and International Trade

Table E-2: Addresses of Canadian Consulates in the United States

Canadian Embassy
501 Pennsylvania Avenue
Washington, D.C., 20001, U.S.A.

Canadian Consulate General, Atlanta
One CNN Center, South Tower, Suite 400
Atlanta, Georgia, 30303-2705, U.S.A.

Canadian Consulate General, Boston
Three Copley Place, Suite 400
Boston, Massachusetts, 02116, U.S.A.

Canadian Consulate General, Buffalo
One Marine Midland Center, Suite 3150
Buffalo, New York, 14203-2884, U.S.A.

Canadian Consulate General, Chicago
310 South Michigan Avenue, 12th Floor
Chicago, Illinois, 60604-4295, U.S.A.

Canadian Consulate General, Cleveland
Illuminating Building, 55 Public Square, Suite 1008
Cleveland, Ohio, 44113-1983, U.S.A.

Canadian Consulate General, Dallas
St. Paul Place, 750 N. St. Paul Street, Suite 1700
Dallas, Texas, 75201-3281, U.S.A.

Canadian Consulate General, Detroit
600 Renaissance Center, Suite 1100
Detroit, Michigan, 48243-1704, U.S.A.

Canadian Consulate General, Los Angeles
California Plaza, 300 South Grand Avenue, 10th Floor
Los Angeles, California, 90071, U.S.A.

Canadian Consulate General, Minneapolis
701 Fourth Avenue South, Suite 900
Minneapolis, Minnesota, 55415-1899, U.S.A.

Canadian Consulate General, New York
1251 Avenue of the Americas
New York City, New York, 10020-1175, U.S.A.

Canadian Consulate General, San Francisco
50 Fremont Street, Suite 2100
San Francisco, California, 94105, U.S.A.

Canadian Consulate General, Seattle
412 Plaza 600, Sixth and Stewart Streets
Seattle, Washington, 98101-1286, U.S.A.

Table E-3: Industry, Science and Technology Canada (ISTC) Offices

Location	*Telephone*	*Fax*
St. John's, Nfld.	(709) 772-4866	(709) 772-2373 and 5093
Charlottetown, P.E.I.	(902) 566-7400	(902) 566-7450
Halifax, N.S.	(902) 426-3458	(902) 426-2624
Moncton, N.B.	(506) 857-6412	(506) 857-6429
Montreal, Que.	(514) 283-5938	(514) 283-3302
Toronto, Ont.	(416) 973-5000	(416) 973-8714
Winnipeg, Man.	(204) 983-2300	(204) 983-2187
Saskatoon, Sask.	(306) 975-4318	(306) 975-5334
Edmonton, Alta.	(413) 495-2944	(403) 495-4507
Vancouver, B.C.	(604) 666-0434	(604) 666-8330

source: ISTC

Table E-4: Provincial Industry Department Offices

Location	*Telephone*	*Fax*
St. John's, Nfld.	(709) 576-2781	(709) 576-3627
Charlottetown, P.E.I.	(902) 566-4222	(902) 566-4030
Halifax, N.S.	(902) 424-4242	(902) 424-5739
Moncton, N.B.	(506) 453-2875	(506) 454-8410
Montreal, Que.	(514) 873-5575	(514) 873-4230
Toronto, Ont.	(416) 963-2501	(416) 963-1526
Winnipeg, Man.	(204) 945-3172	(204) 945-2775
Regina, Sask.	(306) 787-2222	(306) 787-2198
Edmonton, Alta.	(413) 427-4809	(403) 427-0610
Vancouver, B.C.	(604) 660-3935	(604) 660-2457
Whitehorse, Yukon	(403) 667-5466	(403) 667-3518
Yellowknife, N.W.T.	(403) 873-7381	(403) 873-0101

source: various provincial governments

APPENDIX F: FOREIGN DIRECT INVESTMENT IN THE INDUSTRY

APPENDIX F: FOREIGN DIRECT INVESTMENT IN U.S. CONSTRUCTION

The *International Trade Administration*, an agency of the U.S. Department of Commerce, lists 66 foreign companies that made direct investments (acquisition, joint venture, or equity increases) in U.S. construction firms between 1974 and 1986. This list is developed from publicly-available material and as such does not reflect all direct investments made during the period. As indicated, Japanese, British, French and Canadian firms were the most prominent direct investors. In general, the foreign construction contractors in the American market are extremely well-financed and possess construction expertise equal or superior to that of most U.S. builders.

Appendix F: Foreign Direct Investments in U.S. Construction Companies: 1974-86

U.S. Firm Name	*State*	*Foreign Investor*	*Nation*	**Type*	*Amt $US mil*	*Yr*
Dandi Building Systems	Kentucky	Dandi Building Systems	Canada	NP	N/A	86
Hosby USA	New York	Hosby	Denmark	OT	N/A	86
Sunrise Company	California	Mitsubishi Estate Co.	Japan	OT	10.0	86
Perry-Talarico Cos	Colorado	British&Commonwealth	U. K.	AM	N/A	86
Swedehomes, USA	Minnesota	Swedehomes	Sweden	OT	N/A	86
Cadillac Fairview	California	Cadillac Fairview Corp.	Canada	OT	N/A	86
E.W. Howell Co. Inc.	New York	Selmer-Sande A/S	Norway	AM	N/A	86
NVE, Inc.	California	Dai Nippon Construction	Japan	JV	N/A	86
Olympia and York	Florida	Olympia and York Dev.	Canada	OT	N/A	86
Lehrer/McGovern	New York	Peo Steam Nav. Co.	U.K.	OT	15.0	86
Baring Topseal Services	N. Carolina	Mills, Andres	U. K.	OT	N/A	86
Blythe Industries, Inc.	N. Carolina	Alfred McAlpine, PLC	U. K.	AM	N/A	86
East Texas Stone Co	Texas	Lafarge Copper, SA	France	AM	N/A	86
Pacific Construction	Hawaii	Fletcher Const. Co. Ltd.	N.Z.	OT	N/A	86
Comstock Group, Inc.	Connecticut	Spi Bagnotolles	France	AM	12.0	86
Western Stress, Inc.	Texas	Mitsui Engin.&Shipbldg	Japan	AM	N/A	86
Liberty Homes	New York	Corpac Corp. Ltd.	Canada	AM	N/A	85
Cohn Communities	Georgia	CH Beazer	U.K.	AM	5.8	85
Samico Dev. Co.	Texas	Sumitomo Construction	Japan	OT	N/A	85
John Laing Homes	California	John Laing PLC	U.K.	OT	N/A	85
Moseman Construction	California	Holland Group	Australia	AM	N/A	85
Geo-Con Inc.	Pennsylvania	Taisei Corp.	Japan	AM	N/A	85
Morrison Homes	Texas	George Wimpey PLC	U.K.	AM	N/A	84
JDH America Corp.	Florida	Japan Der. and Const.	Japan	OT	0.5	84
Mericon	Utah	Deutsche Babcock	Germany	OT	N/A	84
Green Construction Co.	Iowa	Leighton Holdings Ltd.	Australia	AM	9.5	83
McInerney Pace Inc.	Texas	McInerney Properties.	Ireland	JV	N/A	83
Schal Associates	Illinois	Tarmac PLC	U. K.	OT	N/A	83
Hazama-Gumi	California	Hazama-Gumi Ltd.	Japan	OT	N/A	83
American Home Shield	California	Fenwick Inc. N.W.	Nether.	EI	0.1	83
S.A. Healy Co.	Illinois	Unidentified	Italy	AM	N/A	82
Toda Construction	California	Toda Construction Co.	Japan	OT	N/A	82
Polygon Corp.	Washington	Polygon Investments	Canada	OT	N/A	82
Sam P. Wallace Co.	Texas	Pharaon, Ghaith	S.Arabia	EI	N/A	82
Ferivel Homebuilder	Florida	Le Groupe Ferret Savinel	France	OT	N/A	80
Kuman Corp.	California	Kumagai Gumi Co.	Japan	OT	N/A	80
Pan Pacific Development	Hawaii	Tokyu Construction Co.	Japan	OT	N/A	80
U.S. Home	Texas	Societe Maisons Phenix	France	AM	36.0	80
V.H. Development	Arizona	Nu West Group Ltd.	Canada	AM	N/A	80
W. Watson	California	Societe Maisons Phenix	France	AM	N/A	80
Kajima International	California	Kajima Corp.	Japan	OT	N/A	80
McKeon Construction	California	Barrett Developments	U. K.	AM	32.0	80
Chrestiana Cos.	California	Group, Ltd.	Canada	AM	N/A	80
Societe Auxilliaire	California	Societe Auxiliare	France	AM	N/A	80
Toda America, Inc.	California	Toda Construction Co.	Japan	OT	N/A	80
E.W. Halin	California	Frizec Corporation	Canada	AM	70.0	80
Slattery Associates	New York	AB Skanska Cement.	Sweden	AM	25.0	80
Supreme Constructors	Louisiana	Bralorne Resources, Ltd.	Canada	AM	N/A	80

Appendix F (cont): Foreign Direct Investments in U.S. Construction Companies

U.S. Firm Name	*State*	*Foreign Investor*	*Nation*	*Type*	*Amt*	*Yr*
Communication Electr.	Pennsylvania	Telephone Rental Co.	U. K.	AM	N/A	80
Trans Energy Systems	Washington	Generale de Chauffe SA	France	N/A	N/A	79
Hold That River Engin.	Texas	Sidawi Ghardi & Tawfig	Lebanon	N/A	N/A	79
Avco/Bredero JV	California	Bredero Group	Nether.	N/A	N/A	79
Woodland Hills Village	Maryland	Aoki Construction Co.	Japan	N/A	N/A	79
Wallace Sam P. Inc.	Texas	Pharaon, Ghaith	S.Arabia	N/A	5.0	79
Davy McKee Corp.	Ohio	Davy Int'l Ltd.	U.K.	N/A	N/A	79
Ashland-Warren NE Div	Massachusetts	Tilling Thomas Ltd.	U. K.	N/A	44.0	79
Charmeo/Newarthail JtV	Florida	McAlpine Group Ltd.	U. K.	-	N/A	79
Sugarland Properties	Texas	Royal Dutch Shell Pens.	Nether.	-	N/A	79
Denver TC Inc.	Colorado	European Ferries, Ltd.	U. K.	-	N/A	79
Hallcraft Homes, Inc.	Arizona	Nu-West Development	Canada	AM	4.0	78
Hallcraft Homes Inc.	Louisiana	Nu-West Development	Canada	AM	6.7	78
Fur-Con Corp.	N/A	Bilfinger & Berger	Germany	N/A	17.5	78
Great Lakes Dredge-Cro	Washington	Dredging Int'l	Belgium	JV	N/A	78
Raymond Int'l Inc.	Texas	Banister Corp.	Canada	AM	12.8	77
Amtel Inc.	Wisconsin	Canadian Pacific Inves.	Canada	AM	66.0	77
Wallace Sam P. Co.	Texas	Pharon Ghaith	S.Arabia	AM	1.0	76

*JV = Joint Venture
AM = Acquisition/Merger
EI = Equity increase
OT = Other

Note: Investment size is in $US million for the year in which investment was made.
Source: International Trade Administration, U.S. Department of Commerce.

APPENDIX G: GOVERNMENT PROCUREMENT

APPENDIX G: GOVERNMENT PROCUREMENT

The following tables outline Federal Government construction expenditures for 1983 through 1990. Section 7.2 discusses some of the barriers associated with bidding on government procurement contracts in the United States.

Table G-1: Federal Government Construction Expenditures
(source: Construction Review, May/June 1989)

Federal Construction-related Direct Federal Programs for Fiscal Years 1983-90
(Millions of dollars)

	1983 (actual)	1984 (actual)	1985 (actual)	1986 (actual)	1987 (actual)	1988 (actual)	1989 (estimated)	1990 (budget)
Military construction (10 accounts)*	3,322	3,565	4,136	4,888	5,630	5,546	5,401	5,012
Housing								
Family Housing, Defense (4 accounts)	304	406	334	520	645	557	725	540
Highways and roads	492	353	397	374	313	328	305	306
BIA Road Construction	45	23	112	112	79	80	78	79
USFS Forest Roads & Trails								
USFS Construction & Land Aquisition	402	292	273	253	228	243	213	220
USFS Timber Purchaser Roads	45	38	12	9	6	5	14	*
Hospitals and other health facilities	511	563	589	590	609	815	809	743
H&HS Indian Health Facilities	66	69	1	51	55	50	76	78
NIH Buildings & Facilities	16	18	16	16	19	24	47	24
DVA Construction, major projects	338	353	398	390	376	483	527	514
DVA Construction, minor projects	91	123	124	133	159	258	159	127
Conservation & Development	3,810	3,153	3,858	3,901	4,151	4,348	4,205	4,300
Corps Civil Construction, general	1,258	1,103	1,103	908	951	1,058	1,047	1,103
Corps Flood Control, Mississippi River	284	395	328	330	281	273	370	337
Corps Rivers & harbors contributed funds	45	50	46	46	75	123	185	223
Corps Inland Waterways Trust Fund	0	0	0	0	34	59	73	119
Bureau of Reclamation, Construction	600	656	662	688	639	673	706	655
Reclamation Trust Funds	0	0	2	8	29	40	61	53
Fish & Wildlife Service, Construction	19	16	28	19	26	26	30	34
National Park Service, Construction	106	104	82	110	101	97	82	103
Tennessee Valley Authority Fund	1,244	518	1,448	1,553	1,809	1,863	1,431	1,450
Bonneville Power Administration Construction	160	206	146	174	149	95	183	182
Western Power Administration Construction	94	105	85	74	86	81	98	94
Federal Industrial Structures	1,937	1,949	2,045	1,584	1,449	1,367	1,492	1,751
Atomic Energy Defense, structures	920	908	1,234	1,099	997	826	870	967
Fossil Energy R & D, structures	10	13	4	6	1	18	23	2
General Science & Research, structures	6	100	139	62	55	83	93	272
Uranium Enrichment, Structures	647	606	363	0	12	0	39	48
Energy supply R & D, structures	116	130	99	130	201	255	265	274
Strategic Petroleum Reserve structures	178	192	206	287	183	185	202	186
Other construction-related programs	1,165	1,130	1,367	1,669	1,974	2,138	2,563	3,082
FAA airport facilities & equipment	248	268	425	758	892	1,043	921	1,345
Coast Guard Acquisition, structures	55	54	98	85	71	52	54	55
BIA General Construction	88	101	118	110	87	86	105	102
FPS Prison Building & Facilities	18	52	46	52	98	185	203	317
Washington Airport Construction	14	18	18	8	12	0	0	0
Architect of Capitol, Construction	15	13	18	15	15	20	41	38
NASA Construction of facilities	108	109	170	189	149	166	169	237
Social Security Admin., Construction	48	38	39	35	75	24	15	20
GSA Federal Buildings, Construction	179	122	65	67	254	138	295	386
GSA Federal Buildings, Repair	168	265	232	239	268	390	642	540
OPA Energy Conservation	224	90	138	9	53	34	38	42
Total, 37 major direct Federal programs	11,541	11,119	12,726	13,527	14,771	15,099	15,500	15,734

* For more detail regarding this program, see Table 9.

Table G-1: Federal Government Construction Expenditures
(source: Construction Review, May/June 1989)

Major Construction-related Grant-in-Aid Programs for Fiscal Years 1983-90
(Millions of dollars)

Grant-in-aid programs	1983 (actual)	1984 (actual)	1985 (actual)	1986 (actual)	1987 (actual)	1988 (actual)	1989 (estimated)	1990 (budget)
Housing	0	0	15	142	165	180	215	250
HUD Rental Housing Development	0	0	1	62	66	66	80	100
HUD Rental Rehabilitation grants	0	0	14	80	99	114	135	150
Highways	8,977	10,231	12,725	14,123	12,794	13,584	13,683	13,420
Federal-aid highways (trust fund)*	8,718	10,227	12,584	13,951	12,614	13,829	13,360	13,159
Less: Transfers to UMTA	-219	-591	-462	-389	-264	-132	-179	-185
Trust fund share of other highway programs	9			10	10	8	3	13
Interstate Transfer Grants- Highways	173	284	284	124	57	49	74	73
FHWA miscellaneous appropriations	37			92				
Appalachian regional development highways	116	108	83	92	74	65	74	0
Forest Service permanent appropriations	144	203	236	236	303	305	344	360
Hospitals and other health facilities	31	10	22	18	26	28	37	44
VA new state medical schools	17	5	2	1	0	0	0	0
VA state extended care facilities	14	5	20	17	26	28	37	44
Sewage treatment facilities EPA construction grants	2,983	2,623	2,900	3113	2,930	2,514	2,390	2,350
Conservation and development	219	256	293	264	210	186	186	156
Watershed protection and flood prevention	191	218	249	257	206	185	182	156
Urban park and recreation fund	28	38	44	7	4	1	4	0
Other construction-related grants	8,302	7,929	6,779	6,933	6,220	6,126	6,425	6,619
Rural water and waste disposal grants	157	135	176	178	157	136	151	128
Economic development assistance programs	265	252	263	253	205	211	198	167
Local public works program	17	9	2	2	1	1	0	0
Regional development programs	5	**	9	**	0	0	0	0
Planning assistance grants	3	**	**	0	0	0	0	0
Urban development action grants	451	454	487	461	354	216	310	265
Urban renewal programs	42	44	7	13	0	0	0	0
Community development block grants	2,554	2,819	3,817	3,337	2,991	3,044	3,021	3,025
Appalachian area development programs	36	40	47	43	33	39	65	0
Impact aid, school construction	77	28	31	41	21	36	39	26
FAA grants-in aid for airports	453	694	789	853	917	825	1,123	1,256
UMTA capital grants	2,262	907	376	906	759	585	564	533
UMTA trust fund grants	572	1,250	507	633	668	696	870	986
FRRA Northeast corridor improvement program	296	241	153	97	95	55	50	49
FRRA capital grants to AMTRAK	112	56	105	84	2	32	63	0
Clean Coal Technology	0	0	0	0	7	29	92	95
Solar & Conservation improvements	0	0	0	32	10	3	11	**
Total, 26 major grant-in aid programs	20,512	21,049	22,734	24,593	22,345	22,618	22,936	22,839

*For more detail regarding this program, see Table 10.
**Less than $500,000.

Table G-1: Federal Government Construction Expenditures
(source: Construction Review, May/June 1989)

Major Construction-related Loan Programs: Loan Disbursements on a Credit Budget basis for Fiscal Years 1983-90
(Millions of dollars)

Loan programs	1983 (actual)	1984 (actual)	1985 (actual)	1986 (actual)	1987 (actual)	1988 (actual)	1989 (estimated)	1990 (budget)
Housing	8,911	6,197	6,129	5,882	5,769	5,965	4,935	4,050
FmHA Rural Housing Insurance Fund	2,871	2,562	2,934	2,215	1,763	1,887	1,855	737
DEd College Housing Loans	69	43	43	21	32	36	32	3
FHA Fund	1,486	455	330	423	802	988	1,363	976
FHA Housing for Elderly or Handicapped	850	709	540	553	412	335	339	360
FHA Low-rent Public Housing	474	153	789	1,453	1,318	1,167	829	547
GNMA Special Assistance Functions	2,059	1,268	455	180	12	2	0	0
GNMA Emergency Mortgage Purchases	11	0	0	0	0	0	0	0
GNMA Guarantees of Mortgage-backed Securities	1	14	6	8	169	413	367	209
HUD Rehabilitation loans	34	49	69	59	38	58	45	65
DVA Housing loans and default claims	1,056	944	963	970	1,223	1,079	1,105	1,153
Hospitals and Other Health Facilities	22	4	3	1	0	0	0	0
HRSA Health Facilities	8	2	1	0	0	0	0	0
HRSA HMO Loan and Guarantee Fund	9	2	2	1	0	0	0	0
Conservation and Development	118	129	143	133	159	112	107	94
FmHA Soil & Water Loans[a,e]	47	22	21	11	11	11	11	0
TVA Authority Fund	41	60	63	65	97	73	74	66
Bureau of Reclamation Loan Fund	30	44	58	47	51	28	22	28
Other Construction-related Programs	6,348	5,266	4,675	3,872	2,806	4,391	3,111	2,406
FmHA Rural Development Insurance Fund	575	457	531	463	468	536	441	379
CCC Storage Facility Loans	88	1	1	1	0	1	0	0
REA Community antenna loans	6	4	5	1	0	0	0	0
EDA Economic Development Assistance	17	4	0	0	0	0	0	0
EDA Economic Development Revolving Fund	7	9	8	4	0	9	0	0
HUD Community Development	117	71	103	89	63	39	30	20
DEd College Housing & Academic Facilities Loans	0	0	0	0	0	4	39	46
FRRA Railroad Rehabilitation & Improvement	52	46	13	9	2	7	13	11
D.C. Capital projects	145	115	0	0	0	0	0	0
SBA Business loan and Investment Fund	851	751	497	607	670	559	559	494
SBA Small Business Investment Companies	261	373	265	136	0	0	0	0
SBA Disaster loans	126	160	319	361	209	158	218	230
Rural Electrification & Telephone Fund[a]	4,010	3,175	2,860	2,129	1,342	2,959	1,695	1,057
Rural Telephone bank[a]	93	90	73	72	52	119	116	119
Total, 29 major loan programs	15,399	11,596	10,950	10,080	8,734	10,468	9,153	6,550

[a] These are off-budget programs on the regular budget, but are included in the credit budget.
[b] Off-budget Federal Financing Bank loans made directly, on the basis of loan guarantees made by on-budget agencies. These are included in the cre budget.
[c] This program also provides short-term construction loans. (see Table 12).
[d] Loan obligations rather than disbursements.
[e] Includes both insured and guaranteed loans.
[f] Starting in 1983 these bonds sold directly to the public, rather than to the FFB.

Table G-1: Federal Government Construction Expenditures
(source: Construction Review, May/June 1989)

Major Construction-related Loan Guarantee programs for Fiscal Years 1983-90
(Millions of dollars)

Loan guarantee programs	1983 (actual)	1984 (actual)	1985 (actual)	1986 (actual)	1987 (actual)	1988 (actual)	1989 (estimated)	1990 (budget)
Housing	41,229	37,499	34,721	74,217	128,988	65,920	58,698	62,054
FmHA Rural Housing Insurance Fund	4,162	5,050	3,721	21	*	*	*	*
Less: FmHA guarantee of loans sold to FFB	-4,440	-5,020	-3,695	0	0	0	0	0
FHA Fund (mortgage insurance)	27,564	21,870	23,234	52,220	94,088	48,618	45,212	48,203
Low-rent Public Housing	474	153	c	c	c	c	c	c
Less: Guarantee of FFB Loans[b]	-474	-153	c	c	c	c	c	c
GNMA Guarantee of Mortgage Pools[a]	45,624	32,090	36,277	81,779	115,299	57,135	52,177	55,217
Less: Primary guarantee by VA/FHA/FmHA	-45,624	-32,090	-36,277	-81,779	-115,299	-57,135	-52,177	-55,217
DVA GI Home Loan program	13,643	15,599	11,452	21,976	34,900	17,302	13,486	13,851
Hospitals and other Health Facilities	5	0	0	0	0	0	0	0
HRSA HMO Loan and Guarantee	14	1	0	0	0	0	0	0
Less: HRSA guarantee of FFB Loans[b]	-9	-1	0	0	0	0	0	0
Other Construction-related Programs	5,807	5,595	3,166	2,250	3,423	3,163	3,220	3,211
FmHA Rural Development insurance	1,092	1,381	1,186	127	75	101	174	166
Less: FmHA guarantees of FFB Loans	-1,010	-1,300	-1,010	0	0	0	0	0
Rural Electrification Administration	3,557	2,512	335	933	602	2,000	500	0
Less: REA guarantee of loans sold to FFB[b]	-344	-69	-188	-933	-590	-2,000	-500	0
EDA Economic Development Assistance	3	11	15	22	0	0	0	0
Geothermal Resources Development Fund	9	10	0	0	0	0	0	0
Biomass Energy Development	45	72	300	294	0	0	0	0
DOE Alternative Fuels Production	546	404	247	0	0	0	0	0
Community Development (HUD)	117	71	[illegible]3	59	54	85	100	100
Less: HUD guarantees of FFB Loans[b]	-117	-71	-[illegible]03	-59	-24	n.a.	n.a.	n.a
BIA Indian Loan Guarantee Fund	14	11	49	37	39	38	45	45
FRRA Railroad Rehabilitation & improvement	-19	-1	-4	-9	0	0	0	0
Less: FRRA guarantees of FFB Loans[b]	-19	-1	-4	-9	0	0	0	0
SBA Business Loan guarantees	2,088	2,925	2,496	1,754	3,255	2,939	2,900	2,900
Less: SBA guarantees of FFB Loans	-261	-373	-265	0	0	0	0	0
SBA Pollution control bond guarantees	8	11	1	16	12	0	1	0
Total 18 major loan guarantee programs	47,041	43,093	37,878	76,467	132,411	69,083	61,918	65,265

[a] The GNMA guarantee is a secondary guarantee, which is excluded to avoid double-counting.
[b] FFB Loans are counted as direct loans (see Table 8), thus these loan guarantees are excluded to avoid double-counting.
[c] In FY 1985 these FFB loans were replaced with direct loans from HUD. (See Table 8.)
*Less than $500,000.

Table G-1: Federal Government Construction Expenditures
(source: Construction Review, May/June 1989)

Abbreviations and Acronyms

Amtrak - National Railroad Passenger Corporation
BIA - Bureau of Indian Affairs
CBI - Certificates of Beneficial Interest
CBO - Certificates of Beneficial Ownership
CCC - Commodity Credit Corporation
Corps - U.S. Army Corps of Engineers
D.C. - District of Columbia
DEd - Department of Education
DVA - Department of Veterans' Affairs
EDA - Economic Development Administration
EPA - Environmental Protection Agency
FAA - Federal Aviation Administration
FFB - Federal Financing Bank
FHA - Federal Housing Administration
FHWA - Federal Highway Administration
FHLMC - Federal Home Loan Mortgage Corporation ("Freddie Mac")
FmHA - Farmers Home Administration
FNMA - Federal National Mortgage Association ("Fannie Mae")
FPS - Federal Prison Service
FRRA - Federal Railroad Administration
FY - Fiscal Year
GNMA - Government National Mortgage Association ("Ginnie Mae")
GSA - General Services Administration
H & HS - Department of Health and Human Services
HMO - Health Maintenance Organizations
HRSA - Health Resources and Services Administration
HUD - Department of Housing and Urban Development
ITA - International Trade Administration
LUST - Leaking Underground Storage Tank Reclamation Program
Metro - Washington Metropolitan Area Transit Authority
NASA - National Aeronautics and Space Administration
OMB - Office of Management and Budget
OSMRE - Office of Surface Mining Reclamation and Enforcement
PHA - Public Housing Authorities
REA - Rural Electrification Administration
SBA - Small Business Administration
SCS - Soil Conservation Service
TVA - Tennessee Valley Authority
UMTA - Urban Mass Transportation Administration
USFS - U.S. Forest Service
USPS - U.S. Postal Service

APPENDIX H: WEEKLY WAGES BY TRADE AND REGION

Appendix H: Average Weekly Wages of Tradespeople by State and Trade in 1987

	Plumbing HVAC	Paint Decor.	Electr.	Stonew	Plaster Insul.	Tile Marble	Carpen.	Floors	Roofing Sheeting	Concrete	Well Drilling	Steel Erection	Glass Work	Excav Foundat
United States	464	353	490	361	418	420	359	401	355	382	380	486	450	428
Northeast Region														
New England														
Connecticut	570	383	568	477	581	488	391	471	480	479	545	549	511	567
Maine	404	254	394	307	376	384	287	325	344	325	400	378	320	351
Massachusetts	522	378	531	493	488	512	378	468	445	495	627	588	500	533
New Hampshire	446	270	420	386	466	383	301	339	374	380	489	373	455	420
Rhode Island	439	336	454	467	436	383	336	309	395	432	336	532	458	410
Vermont	368	252	361	294	360	269	262	253	334	320	431	429	403	347
Mid-Atlantic Division														
New Jersey	555	425	598	460	562	485	423	522	456	513	523	592	592	570
New York	551	422	640	466	564	518	447	457	407	479	484	557	501	495
Pennsylvania	500	360	513	367	490	468	353	374	368	383	429	541	438	409
Midwest Region														
E-N Central Division														
Illinois	594	458	634	495	546	526	478	502	426	498	475	589	516	566
Indiana	477	355	492	340	420	479	276	326	383	330	413	493	433	368
Michigan	528	388	569	435	462	496	389	386	424	468	364	581	478	498
Ohio	470	349	492	377	438	471	320	403	370	387	377	524	428	389
Wisconsin	492	341	500	378	396	397	309	326	361	365	384	556	423	405
W-N Central Division														
Iowa	409	302	431	332	374	414	283	300	282	326	310	346	416	344
Kansas	433	329	464	318	396	343	321	437	332	378	396	382	431	417
Minnesota	547	417	563	460	497	526	338	427	413	477	407	581	495	469
Missouri	521	390	554	427	478	502	410	426	376	361	336	508	501	411
Nebraska	386	283	411	267	378	398	277	319	308	281	314	359	364	328
North Dakota	378	282	371	316	352	256	225	266	313	241	289	484	un	275
South Dakota	323	261	342	267	293	341	224	205	347	290	269	302	359	354

NOTE: TABLE CONTINUED ON FOLLOWING PAGE

Appendix H: Average Weekly Wages of Tradespeople by State and Trade in 1987

	Plumbing HVAC	Paint Decor.	Electr.	Stonew	Plaster Insul.	Tile Marble	Carpen.	Floors	Roofing Sheeting	Concrete	Well Drilling	Steel Erection	Glass Work	Excav Foundat	Wreck Demol	Install Equip	Special Trade
South Region																	
South Atlantic Div'n																	
Delaware	380	320	443	309	363	525	261	311	334	283	350	490	410	420	332	494	317
Washington, D.C.	513	382	434	377	402	422	411	392	349	392	NA	512	343	400	261	646	423
Maryland	448	345	473	356	438	500	342	385	374	372	432	417	478	437	388	542	371
North Carolina	357	261	367	237	318	311	256	263	267	260	309	328	378	313	224	440	282
South Carolina	336	224	380	192	293	295	246	220	257	244	304	343	368	327	212	439	263
Florida	362	285	370	281	346	338	303	358	301	315	322	364	370	341	354	568	334
Georgia	392	322	425	246	353	359	278	368	318	307	296	400	412	357	302	523	344
Virginia	388	320	422	317	400	368	317	374	308	357	338	440	473	388	362	527	336
West Virginia	400	338	467	264	503	372	269	228	351	286	264	497	368	338	316	462	388
E-S Central Division																	
Alabama	353	282	357	242	332	332	259	278	261	243	258	390	352	298	242	436	287
Kentucky	378	317	405	260	347	334	236	292	302	274	272	406	357	288	242	455	286
Mississippi	311	268	375	164	323	301	227	242	262	213	311	359	336	293	221	456	259
Tennessee	366	318	413	281	338	367	255	287	302	290	286	394	402	340	283	492	312
W-S Central Division																	
Arkansas	345	285	380	226	313	280	265	281	277	232	310	329	un	278	NA	406	287
Louisiana	378	325	421	264	363	315	277	300	292	256	321	358	364	290	283	483	347
Oklahoma	383	300	378	267	374	355	273	304	351	308	224	421	346	310	385	411	278
Texas	398	320	420	286	381	328	288	345	288	282	307	376	388	334	386	564	338
West Region																	
Mountain Division																	
Arizona	385	277	380	305	323	323	357	358	308	347	388	454	374	387	428	488	348
New Mexico	348	271	378	263	282	287	226	270	257	261	268	352	317	311	295	481	272
Colorado	442	321	465	358	381	438	344	451	331	320	333	404	387	386	318	581	385
Idaho	388	256	380	261	280	288	248	244	276	254	311	427	un	288	NA	526	316
Montana	424	335	432	314	315	306	278	185	322	330	281	340	270	265	NA	un	318
Utah	401	278	421	273	325	332	251	335	304	348	288	428	325	338	310	457	350
Wyoming	370	276	428	294	355	358	288	174	241	310	348	522	347	339	NA	un	288
Nevada	478	381	494	431	408	417	318	405	378	443	423	526	435	437	NA	un	368
Pacific Division																	
California	548	391	540	444	438	458	374	431	375	440	482	564	518	546	482	680	431
Oregon	439	303	467	368	344	333	283	335	304	324	334	462	492	434	350	500	336
Washington	472	321	480	389	357	380	280	326	328	318	343	503	395	373	388	621	330
Alaska	694	503	737	568	530	581	420	524	516	678	478	741	513	553	610	783	700
Hawaii	589	547	608	413	598	454	488	439	406	488	468	632	517	508	477	628	432

Source: U.S. Department of Labour; Employment and Wages, 1987

Note: ENR, in the June 29, 1988 issue, listed the 1988 increase in trade wages as averaging 5 percent. This can be applied fairly consistently to all trades.

APPENDIX J: INDUSTRIAL CONSTRUCTION COSTS BY REGION

APPENDIX J: INDUSTRIAL CONSTRUCTION COSTS, BY REGION

The research firm, R.S. Means, monitors the U.S. construction industry on an ongoing basis and publishes construction cost information dealing with foundations, framing, roofing, mechanical, electrical, overhead, profit and various other aspects of the construction of residential, commercial, repair and remodeling, and industrial structures.

The following table presents information dealing with the costs of constructing small, large and high technology industrial structures. These costs are highest in the northeastern cities, where large industrial plants typically require more than $US 25 per square foot to construct. Costs in the southern and western cities, on the other hand, generally rest in the $US 15-20 range. Rates in Toronto and Montreal, as indicated, are quite high relative to most U.S. cities.

The table also provides "location factors" for each city, as derived by R.S. Means in their annual survey. This measure is a further indication of the relative costs of construction and materials in various cities. As an example, the location factor information suggests that the cost of constructing a commercial facility in Madison is 93 percent of what it would cost for a comparable facility in Chicago.

Region	*City*	*Construction Costs in $US per square foot*			*Location Factor*
South Region					
South Atlantic Division					
Delaware	Wilmington	na	14	na	1.02
Washington, D.C.	Washington	45	25	50	0.96
Maryland	Baltimore	55-60	22-25	50	0.96
North Carolina	Charlotte	40	16	45	0.82
South Carolina	Charleston	20-25	12 to 20	22-30	0.82
Virginia	Norfolk	30	17.5	40	0.85
West Virginia	Lewisburg	na	na	na	1.00
Florida	Jacksonville	20-35	15-18	18-22	0.87
Florida	Ft Lauderdale	27	16	42	0.94
Florida	Orlando	30	15	38	0.86
Florida	Miami	27	17	34	0.86
Florida	Palm Beach	32	na	na	0.92
Florida	Tampa	28	15	30	0.89
Georgia	Atlanta	42	16	47	0.90
E-S Central Division					
Alabama	Birmingham	32	16	40	0.86
Kentucky	Louisville	25	16-20	na	0.91
Mississippi	Jackson	22.5	16	40	0.83
Tennessee	Memphis	21.5	13.5	30	0.81
W-S Central Division					
Arkansas	Little Rock	22.5	18.5	na	0.87
Oklahoma	Oklahoma City	27	17	35	0.82
Texas	Austin	28	17	40	0.90
Texas	Dallas	24	12.5	36	0.91
Texas	Houston	29-30	14-16	25-35	0.94
Texas	San Antonio	21-25	10 to 12	24-27	0.88
Louisiana	New Orleans	28	15.5	25	0.93
West Region					
Mountain Division					
Colorado	Denver	22	14	28	0.98
Idaho	Boise	na	na	na	0.95
Montana	Billings	na	na	na	0.95
Utah	Salt Lake City	na	na	na	0.94
Wyoming	Cheyenne	na	na	na	0.90
Arizona	Phoenix	20-25	10 to 15	50-125	0.92
New Mexico	Albuquerque	37.5	27.5	55	0.94
Nevada	Las Vegas	na	na	na	1.08
Pacific Division					
California	Los Angeles	20-35	13-20	30-60	1.15
California	Oakland	40	28	60	1.25
California	San Francisco	55	na	na	1.25
California	San Diego	27-30	14-16	24-28	1.12
California	Sacramento	22	12.5	25	1.09
Oregon	Portland	20	16	22	1.04
Washington	Seattle	30	14	30	1.04
Alaska	Fairbanks	na	na	na	1.34
Hawaii	Honolulu	na	na	na	1.15
Canada	Toronto	55-65	35	70	1.08
Canada	Vancouver	na	na	na	1.06
Canada	Montreal	50-55	32	45-65	0.98

TABLE CONTINUED ON NEXT PAGE

Appendix J: Industrial Construction Cost Comparisons, 1987/1988

Region	City	Construction Costs in $US per square foot "Small"	"Large"	"High Tech"	Location Factor Commercial
Northeast Region					
New England Division					
Connecticut	Hartford	46	36	45	1.01
Maine	Bangor	na	na	na	0.89
Massachusetts	Boston	40	18	60	1.12
New Hampshire	Manchester	na	na	na	0.93
Rhode Island	Providence	na	na	na	1.01
Vermont	Burlington	na	na	na	0.90
Mid-Atlantic Division					
New Jersey	Mid-N.J.	43	27	60	1.06
New Jersey	Northern N.J.	37	27	55	1.07
New York	Manhattan	45-75	50	na	1.20
New York	Long Island	75-85	50-55	75-150	1.20
New York	Buffalo	30-35	24-26	65-75	1.04
New York	Syracuse	30	22	50	0.97
Pennsylvania	Philadelphia	43	24	56	1.04
Pennsylvania	Pittsburgh	35	24	35	1.03
Midwest Region					
E-N Central Division					
Illinois	Chicago	38	20	57	1.00
Indiana	Indianapolis	18-22	13-15	25-40	0.98
Michigan	Detroit	35-37	25	50	1.05
Ohio	Cleveland	35-42	17-19	45-60	1.10
Ohio	Cincinnati	40	17	NA	0.98
Ohio	Columbus	28-40	12 to 15	35-40	0.99
Wisconsin	Madison	na	na	na	0.93
W-N Central Division					
Iowa	Des Moines	25	17.5	35	0.93
Kansas	Kansas City	50	22	50	0.98
Minnesota	Minneapolis	40	19	47	1.00
Missouri	St. Louis	40	25	30	1.01
Nebraska	Omaha	28-30	13-14	32-35	0.91
North Dakota	Fargo	na	na	na	0.91
South Dakota	Sioux Falls	na	na	na	0.84

Sources: Society of Industrial and Office Realtors for Construction Costs; RS Means for Location Factors.
Notes: 1) "Small" industrial facility denotes a facility of less than 5000 square feet.
2) "Large" industrial facility denotes a building of greater than 100,000 square feet.
3) "High Tech" denotes a high technology facility and includes buildings for R&D purposes.
4) Construction costs reflect general contractor costs, overhead and profit. They exclude architectural, engineering and financing fees.
5) "Location Factors" apply to the costs for materials and installation for a given commercial project and indicate the relative cost for various locations. For example, building a commercial facility in Madison would cost 93% of that of a similar facility in Chicago.

APPENDIX K: TAX RATES BY STATE

APPENDIX K: CORPORATE AND SALES TAX LEVELS

The following table illustrates the corporate income tax levels applied by individual states in 1988. These rates do not incorporate deductions which may exist in different states or industries. Taxes are generally due in March or April to the appropriate Revenue or Tax department of the state.

Individual states apply sales tax on construction materials, although certain projects are exempt from sales tax. State sales tax rates are also listed in the table.

Appendix K: Corporate Rates and Sales Tax by State, 1988

	Corporate Rate	Income Range	Sales Tax
Alabama	5%		4%
Alaska	1%	1st 10,000	0%
	2%	$10-$20M	
	3%	$20-$30M	
	4%	$30-$40M	
	5%	$40-$50M	
	6%	$50-$60M	
	7%	$60-$70M	
	8%	$70-$80M	
	9%	$80-$90M	
	9.4%	over $90M	
Arizona	2.5%	1st $1M	5%
	4%	2nd $1M	
	5%	3rd $1M	
	6.5%	4th $1M	
	8%	5th $1M	
	9%	6th $1M	
	10.5%	over $6M	
Arkansas	*1%	1st $3M	4%
	2%	2nd $3M	
	3%	next $5M	
	5%	next $14M	
	6%	over $25M	
California	9.3%	min. $300	6%
Colorado	5.5%	1st $50M	3%
	5.9%	balance	
Connecticut	11.5%		7.5%
Delaware	8.7%		0%
D.C.	*12.5%	min. $100	6%
Florida	5.5%		5%
Georgia	6%		3%
Hawaii	4.4%	1st $25M	4%
	5.4%	next $75M	
	6.4%	over $100M	
Idaho	8%		4%
Illinois	4%		5%
Indiana	3.4%		5%
Iowa	6%	1st $25M	4%
	8%	next $75M	
	10%	next $150M	
	12%	over $250M	
Kansas	*6.75%	over $25M	3%
Kentucky	3%	1st 25M	5%
	4%	2nd $25M	
	5%	next $50M	
	6%	next $150M	
	7.25%	over $250M	
Louisiana	4%	1st $25M	4%
	5%	2nd $25M	
	6%	next $50M	
	7%	next $100M	
	8%	over $200M	

* includes a surtax

table continued...

Appendix K (cont): Corporate Tax Rates and Sales Tax by State, 1988			
	Corporate Rate	Income Range	Sales Tax
Maine	3.5%	1st $25M	5%
	7.93%	next $50M	
	8.33%	$175M	
	8.93%	over $250M	
Maryland	7%		5%
Massachusetts	9.5%	+$2.60/$M net worth	5%
		$456 min.	
Michigan	2.35%		4%
Minnesota	9.5%		6%
Mississippi	3%	1st $5M	6%
	4%	next $5M	
	5%	over $10M	
Missouri	3%		6.2%
Montana	6.75%	min. $50	0%
Nebraska	4.75%	1st $50M	3.5%
	6.65%	over $50M	
Nevada	na		5.8%
New Hampshire	8%		0%
New Jersey	9%		6%
New Mexico	4.8%	1st $500M	3.8%
	6.4%	2nd $500M	
	7.6%	over $1M	
New York	9%	min. $250	4%
North Carolina	7%		3%
North Dakota	3%	1st $3M	4%
	4.5%	next $5M	
	6%	next $12M	
	7.5%	next $10M	
	9%	next $20M	
	10.5%	over $50M	
Ohio	5.1%	1st $25M	5.5%
	plus 8.9%	over $25M	
		min. $50	
Oklahoma	5%		3%
Oregon	6.6%	min. $10	0%
Pennsylvania	8.5%		6%
Rhode Island	8%	min. $100	6%
South Carolina	5%		5%
South Dakota	na		4%
Tennessee	6%		5.5%
Texas	na		4%
Utah	5%	min. $100	5.5%
Vermont	5.5%	1st $10M	4%
	6.6%	next $15M	
	7.7%	next $225M	
	8.25%	over $250M	
		min. $75	
Virginia	6%		4%
Washington	na		6.5%
West Virginia	9.6%		5%
Wisconsin	7.9%		5%
Wyoming	na		3%
U.S. Average	na		4.25%

Source: Associated General Contractors of America

INTERVIEWEES AND REFERENCES

List of Interviewees

Canadian Interviewees

- Eniko Russell, Alphaform Exhibits;
- Roland Nicholls, Milne and Nicholls Contractors;
- Robert Shishakly, Black and McDonald Contractors;
- Paul Giannelia, W.A. Stephenson Contractors;
- Gord Mollenhauer, Mollenhauer Contractors;
- Bill Nevins, Chief Economist, Canadian Construction Association;
- Kevin MacIntosh, W.F. Baird and Associates;
- Brian Fitzpatrick, First Quebec Corporation, formerly of Fitzpatrick Construction;
- Red McRae, formely of McNamara Construction;
- John Mollenhauer, Mollenhauer Properties Limited;
- Tim Kehoe, Royal Architectural Institute of Canada;
- Stephen Revay, Revay and Associates Limited.

U.S. Interviewees

- Ann Powe, State Estimates Branch, Census Bureau, U.S. Department of Commerce;
- Gloria Goings and Kevin Kasunic, U.S. Bureau of Labor Statistics;
- Brian Oak, Commercial Counsellor, Canadian Embassy, Washington;
- Judith Bradt, Government Procurement Officer, Canadian Embassy, Washington;
- Manuel Ellenbogen, Commercial Officer, Canadian Embassy, Washington;
- Wendell Sanford, Consul and Trade Commissioner, Canadian Consulate, Boston;
- Jack McManus, Commercial Trade Officer, Canadian Consulate, Boston;
- Paul Donohue, Canadian Consulate, San Francisco;
- Arlene Holden, Canadian Consulate, San Francisco;
- William Wallace, Publisher, Daily Construction Service, San Francisco;
- Gene Suttle, Deputy Executive Director, San Francisco Redevelopment Agency;
- Isabella Wong, San Francisco Redevelopment Agency;
- Carl Goepfert, Manager of Projects, Bechtel Corporation, San Francisco;
- Glenn Isaacson, Executive Vice-President, Bramalea Pacific, San Francisco;
- Fred Babis and Albert Shott, Commercial Officers, Canadian Consulate, Seattle;
- Dick Bistow, Associated General Contractors, Seattle;
- James Williams, Seattle Master Builders Association, Seattle;

- Robert White, Manager of Capital Planning, Seattle Municipality Metro, Seattle;
- Robert Lurensky, U.S. Department of Commerce;
- Patrick MacAuley, Nonresidential Construction Specialist, U.S. Department of Commerce;
- Charlie Helliwell, Deputy Director, Centre for Construction Research and Education, Massachusetts Institute of Technology;
- James McKellar, Director, Centre for Real Estate Development, Massachusetts Institute of Technology;
- Sally Brain, Economist, Associated General Contractors;
- Karen O'Donnell, Tax and Fiscal Services, Associated General Contractors;
- Nancy McCann, Publications, Associated General Contractors;
- Christopher Engquist, Collective Bargaining, Associated General Contractors;
- Robert Gasperow, Construction Labour Research Council;
- Theresa Garrison, Caldwell Banker;
- William Magruder, Vice-President, Omni Construction Inc.;
- A.S. (Mack) McGaughan, President, A.S. McGaughan Co. Inc.;
- Sara Dillon, Sales Manager, Cognetics;
- Richard Marshall, Information Services Division, F.W. Dodge;
- Brenda Yates and Vicki Garrett, Census Bureau, Department of Commerce;
- Charles Pitcher, Building Materials and Construction Division, Department of Commerce;
- Henry Wolfe, Government Division, Department of Commerce;
- Russell Rhea, Commercial Officer, San Francisco Consulate;
- Bernard Brandenburg and Michael Pascal, Commercial Officers, Canadian Consulate, Los Angeles;
- James Monsees, Metro Rail Transit Consultants, Los Angeles;
- Michael Warren, Chief Financial Officer, Urban West Communities, Los Angeles;
- Rick Miranda, Director of Commercial Construction, Bramalea California, Los Angeles;
- Gregory De Lavalette, Gary Butler, Dave Deming, John Hakel, Associated General Contractors, Los Angeles.

List of References

Canadian References

- *Annual Report of the Minister of Supply and Services*, Labour Union Activity, Statistics Canada 71-202, 1988;
- *Trade Shows and Exhibits Schedule*, Alphaform Exhibits, 1989;
- *Employment Earnings and Hours*, Statistics Canada, May 1989
- *Canadian Trade Representatives Abroad*, External Affairs, April 1989;
- *Canadian Construction Record*, Southam Business Publication, Various Issues;
- *So You Want to Export? Making the Initial Decision*, External Affairs, April 1988;
- *Construction Contracting Industry Profile*, Industry, Science and Technology Canada, 1988;
- *The Canada-U.S. Free Trade Agreement*, Speaking Notes for Address by Robert Nuth, Canadian Construction Association, November 1987;
- *Free Trade and Construction*, Canadian Construction Association, 1988;
- *The Canada-U.S. Free Trade Agreement and Services*, External Affairs, 1988;
- *How Well Do We Compete? Relative Labour Costs in Canada and the United States*, Conference Board of Canada, 1988;
- *Results of a Survey of Construction Exports*, Industry Science and Technology Canada, 1988;
- *Program for Export Market Development Handbook*, External Affairs, 1988;
- *Building Abroad, A Guide for the Canadian Contractor*, Department of Regional Industrial Expansion, 1987;
- *Building Permits*, Statistics Canada 64-001, 1988;
- *International Financing Data, A Business Guide to Eport Financing*, External Affairs, March 1988;
- *Construction*, Canadian Construction Association, Various Issues;
- *Construction Export Directory*, Canadian Construction Association, 1988;
- *The Benefits from the Export of Consulting and Construction Services*, Robertson Nickerson, March 1986;
- GATT - Uruguay Round, *Construction Submission to SAGIT on General Services*, February, 1989.

American References

Government Documents

- *United States Industrial Outlook*, U.S. Department of Commerce, International Trade Administration, 1989;
- *The Service Economy*, Coalition of Service Industries, March 1988;
- *Service Annual Survey*, U.S. Department of Commerce, Bureau of the Census, 1986;
- *Value of New Construction Put in Place*, U.S. Department of Commerce, Bureau of the Census, July 1988;
- *Annual Estimates of the Population of States, 1980-1988*, U.S. Department of Commerce, Bureau of the Census;
- *Hours and Earnings*, Office of Wages, U.S. Bureau of Labor Statistics, 1989;
- *Survey of Current Business*, U.S. Department of Commerce, Bureau of Economic Analysis
- *State Government Finances*, U.S. Department of Commerce, Bureau of the Census, 1987;
- *Foreign Builders Target the United States, Implications and Trends*, International Trade Administration, Department of Commerce, February 1988;
- *Trade in Services*, Office of Technology Assessment, U.S. Department of Commerce, 1987;
- *Linking America - The County Highway System*, National Association of Counties, 1989;
- *Buy America Act*, certain federal and state policies, October 1987 Edition;
- *Opportunities for Canadian Suppliers of Urban Transit Equipment*, Canadian Consulate in San Francisco, September 1989;

Private Reports and Studies

- *Infrastructure Report*, Merrill Lynch Fundamental Equity Research Department, October 1988;
- *Fragile Foundations*, Report to Congress by National Council on Public Works Improvment, February 1988;
- *Rebuild America, A Coalition for Quality Infrastructure Investment*, various brochures and studies, 1988 and 1989;
- *Rx for Productivity: Build Infrastructure*, Federal Reserve Bank of Chicago, September 1988;
- *Document on U.S. Construction Industry*, FMI Marketing Services, 1989;
- *AGC Publications and Services Catalogue*, Associated General Contractors, 1989;
- *Office Vacancy Index*, Coldwell Banker, December 1988;
- *Industrial Vacancy Index*, Coldwell Banker, December 1988;
- *Office Outlook Report*, Coldwell Banker, Various Regions, 1988;
- *Industrial Market Bulletin*, Coldwell Banker, Various Regions, 1988;
- *Means Square Foot Costs*, R.S. Means Inc, 1988;

- *Trade Show and Convention Guide*, Laventhol and Horwath, 1989;
- *Declining Unionization in Construction: The Facts and the Reasons*, Steven G. Allen, 1988;
- *Encyclopedia of Associations*, Gale Research Company, 1988;
- *Development*, other publications, National Association of Industrial and Office Parks, 1989;
- *Summary of Responses to AGC Collective Bargaining Services Survey*, Associated General Contractors, 1988;
- *Various National Newsletters*, Associated General Contractors, 1988, 1989;
- *The Washington Construction Report*, Associated General Contractors, 1989;
- *Daily Construction Service*, various 1989 issues, Wade Publishing, San Francisco;
- *California Construction Review*, Construction Industry Research Board, August 1989;
- *Housing Economics*, The Outlook, September 1989;
- *San Francisco Bay Conservation and Development Commission*, Annual Report, 1988;
- *14 Million Businesses*, American Business Lists Inc., July 1988;

Academic Documents

- *Construction*, MIT Centre for Construction Research and Education, various issues;
- *Research and Development in the U.S. Construction Industry*, Fred Moavenzadeh and Ann Brach, MIT, ;
- *A Strategic Response to a Changing Engineering and Construction Market*, Fred Moavenzadeh, MIT, April 1989;
- *U.S. Construction Industry: Issues and Challenges*, Fred Moavenzadeh, MIT, October 1988;
- *Presence of Foreign Firms in the U.S. Construction and Engineering Market*, Fred Moavenzadeh, MIT, March 1989;
- *Government Roles in City Development in the United States*; Bernard Frieden, Lynne Sagalyn and Joseph Coomes, MIT, June 1988;
- *Understanding Foreign Investment in U.S. Real Estate*, Lawrence Bacow, MIT, November 1987;

Magazines

- *Construction Review Magazine*, U.S. Department of Commerce, International Trade Administration, Various 1988 and 1989 Issues;
- *ENR Magazine* (formerly Engineering News-Record), McGraw-Hill, various issues;
- *Site Selection and Industrial Development Magazine*, various issues;
- *Gridlock*, Time Magazine, September 12, 1988;
- *Stretched Thin*, Business Week, June 1989;
- *Hot Spots*, Inc. Magazine, March 1989;
- *The Wall Street Journal*, Various Articles, 1989;
- *Rust to Riches*, Success Magazine, March 1989;

- *New England Construction*, various issues, 1989;
- *Constructor*, Associated General Contractors, various issues, 1989;
- *Forbes Annual Report on American Industry*, 1989;
- *Moody's Industrial Manual*, 1988;
- *Metro Magazine*, December 1988;
- Various *Dun and Bradstreet* Reports.
- *The Rebuilding of America*, Barrons, November 14, 1988;